The Iron Age

A Review of the Hardware, Iron and Metal Trades.

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Some New German Stoves.

Through the kindness of a friend lately returned from abroad, we have secured photographs of some interesting stoves, which are shown in the accompanying illustrations. They are made by Louis Marburg & Son, Frankfort on-the-Main, and are probably the most striking and impressive examples of stove architecture we have ever seen.

The middle stove of our group is made wholly of green enameled tiles. Concerning stoves of this general class a correspondent, writing from Vienna, says:

"They are exceedingly economical in the matter of heat in Vienna. They have cold and raw weather enough, but they are not educated to the heat necessary—or considered so—in American domiciles. The German stove is an elaborate affair of iron or porcelain, with an ash receptacle at the base, a fire-box, and flues that convey heat upward a foot or so, and across to the other side, and thence back again, till finally the pipe is reached, the theory being that when this heating surface is made hot it will last all day. Into this miserably economical affair they put a very little wood and a very little coal, and it develops just enough heat to make you sensible that the room is very cold. As the fire-box will only hold so much fuel, you simply sit and shiver, and wish you could sit for an hour before a good, generous open grate, or around a fiery furnace of a base-burner, or any American contrivance for fighting the frost king. However, they are educated to this sort of thing, and, poor things! don't know any better. By the aid of shawls and heavy clothing they manage to keep warm during the winter. In the summer they get all the heat they want."

As the rule, Americans are apt, like the correspondent above quoted, to look with contempt upon German stoves and fuel, but once in a while they make a mistake. A friend of ours reached a German hotel one chilly evening, and thinking that a fire would be comfortable, he indicated to the servant that he would like some fuel for the stove. Presently a small quantity of coal was brought. Our friend looked at it, and remarked in German the equivalent of the popular American phrase, "Yes, that's the kind I want. Now bring me some." By dint of much persuasion he induced the waiter to bring as much as seemed necessary, and then to make a fire. After the man had gone our friend proceeded to fill the stove. It was cold, and with characteristic impetuosity he piled in all the fuel he had. Then he went out for a walk, and when he returned the room, to use his own phrase, "was just bulging." He could neither sit nor sleep in it, and had to secure another room and pay for both. From this experience he concluded that he did not know as much about German stoves and fuel as he thought, and that in future he would leave the management of his bedroom fires to the servants.

From its size and magnificence, one might conclude that the tile stove shown in our cut is an exceptional production, intended for the palaces and castles of the nobility, but the best of them are found in general use, and are commonly rented with the houses. Considering its proportions and the location of the feed door, we feel safe in saying that this tile stove is the most magnificent example of "high art and low feed" we have ever seen. The friend to whom we are indebted for the cuts we reproduce writes concerning this stove:

"As a matter of fact, the cut sent you does not do the stove justice. It is rich beyond comparison. There may be some exception taken to its rather monumental shape, but as to richness of coloring and the artistic work in general there cannot be two opinions. The stove is handsome beyond description, and must add very largely to the furnishing of any room. The cut sent represents a stove made with one-color tile throughout, except the various shadings of the several tiles. What surprised me most was to see the elaborateness of some of the cornices, columns and decorations generally, and to find that some of the larger sections were complete in the one piece. The cut shows the various pieces very distinctly, but you will notice particularly, so far as I remember the matter now, that the upper cornice is simply one piece. I had the pleasure of going through a stove house in Frankfort-on-the-Main, where these stoves are mounted, and they showed me stoves completed, and also the various pieces and their methods of putting together. The tiles, as you are probably aware, are made in Dresden, Saxony, and the one thing I regret more than any other in connection with this matter is that time did not permit me to go down there to see the operation of molding them. There is an entire absence of iron fittings in connection with the stove, except in the fire door, and in some cases the ash door, as clearly shown by the cut. The tiles are made very thick, especially the pieces surrounding the fire chamber, being 3 or even 4 inches in thickness, and are put together and cemented there, the same as in placing fire-brick or anything of that nature. These stoves are made in various sizes, but the most of the tile stoves I saw were of the size represented in cut. This, I think, stands 7 or even 8 feet high, and the breadth and depth are in corresponding proportion. Of course, there is no objection to this extreme hight on account of feeding, as this is done very near the bottom. As far as I understood the matter, they were not in the habit of making more than one fire a day, and that usually in the morning; that is to say, they light the fire in the morning, put in sufficient fuel to last some three or four hours, and do not replenish it during the day, except in extremely cold seasons, the theory being that this is sufficient to heat the entire surface of the stove, although it takes two or three hours to do so, and when this is accomplished they simply close up the exits of the stove and let it gradually cool off and give off its heat into the room. This, to me, seems a very primitive method of heating, and one that I think Americans would not take very kindly to. In fact, our consuls, with whom I talked, admitted they were pretty nearly frozen from the inadequate heating capacity, and were very desirous of getting American stoves, and lost no opportunity of doing so. The sizes smaller than that shown in the cut are finished in porcelain and are less elaborate, being considerably cheaper in cost, and the finish generally being much plainer. I was surprised to find, however, that the price of the large size of tile stoves represented by cut was very reasonable. I was assured that these sold as low as the medium size of the American base-burner which is there from $40 to $50.

"As to the kind of fuel used in these tile stoves, they use a species of hard coal very similar to that used here, but a little more bituminous, if anything. They have grades that compare very favorably with ours, but the softer kind is rather more desirable for the stoves in question, as their draft is not of the best. As will be implied from what I have said, their internal construction is very simple, being little better than direct-draft stoves, and the management they require is of the simplest kind. In fact, it is hard to imagine anything more primitive in this respect. In most cases I found that the means of taking the ashes away were much the same as in use here with the better class of grates—that is, the stoves were in connection with an ash-pit, into which all refuse ashes were discharged and emptied once or twice a day, as necessary; but in most cases these were discharged into an ordinary ash-pan and taken away as necessity required. The use of fuel in a stove of this class is very limited; consequently there is not much occasion for a very elaborate arrangement for removing the ashes or anything of that nature."

There is, of course, no reason why these stoves should not be made as effective as heaters as the Swedish tile stoves, which are famous heaters. But whatever their construction, they are very interesting and beautiful, and as ornaments they surpass anything in the stove line made in this country.

At the Zurich exhibition some remarkably fine tile and porcelain stoves were shown. A correspondent who was at that time in Switzerland and who attended the exhibition, writes: "The exhibition contains several fine specimens of *faïence* stoves, both ancient and modern, in the production of which Switzerland has for ages excelled. This industry flourished from the sixteenth to the eighteenth century, and its most important seat was Winterthur. These stoves are composed of tiles which, in the first instance, were embellished with figures in strong relief, painted green or brown, and highly varnished. The scenes depicted are nearly all Biblical and in great variety. Built as they are in stages *en retraite*, and surmounted with a highly artistic coping, the whole in true Renaissance style, some of the stoves are exceedingly beautiful. At a later period it became the fashion simply to ornament the tiles on a white ground. Swiss stoves in this style of the seventeenth century are unrivaled. The most illustrious masters did not distain to furnish designs for their decoration. The subjects, mostly allegories and personifications, were well chosen and skillfully executed. A Swiss gentleman of that age often spent as much money in the decoration of his stoves as on the building of his house. After the seventeenth century painting in colors was superseded by designs of blue, of which the subjects, at first artistic, degenerated into the conventional and stereotyped landscapes. In the end, decoration was altogether abandoned, and the stoves were built inexpensively of white *faïence* tiles. But the older stoves are as remarkable for the beauty of their form as for the richness of their adornment.

"The collection of Herr Angst, which he has lent to the exhibition, comprises some really superb specimens. The finest is round in shape, built of bossed medallion-like tiles, painted in deep colors on a gray ground. The general effect is that of enamel, embossed with gold and silver. When Herr Angst discovered this gem it was covered with a thick coating of whitewash! The making of *faïence* stoves has recently been revived, and a wonderful specimen, modeled by Mr. F. Pfaus, of Winterthur, in whose family the art has been a tradition for generations, is on view at the exhibition. It is hexagonal in shape, and supported on four pedestals in the form of lions. Under the coping is a frieze, on which are depicted Night and Morning and the four seasons, while lower down appear allegoric figures representing Faith, Justice, Charity, and other virtues. The back part of the stove touches the wall, through which, from the outside, after the manner common in Germany and Switzerland, the fire is fed with fuel. On either side of the stove is a seat, also in *faïence*. In the centre are niches, containing, in full relief, statuettes emblematic of the five continents. The entire front is decorated in painted *faïence*, and here and there, according to ancient custom, appear texts and verses in old German characters. Another specimen, on which are painted, in deep green on a white ground, the five senses, in the style of the sixteenth century, is an exact reproduction of a stove of that age still in use in the *château* of Wulflingen. Herr Keiser, of Zug, instead of working after ancient patterns, has built a modern *faïence* chimney-piece, modeled on a design of his own. The sides are supported by graceful colonettes; the part immediately above the hearth is adorned with colored medallions and battle pieces, and the coping takes the shape of a seemly cornice. The coloring and workmanship are excellent, and the general effect is in the highest degree pleasing and artistic."

The stoves shown at Zurich were finer and more remarkable than the one we illustrate, but they belong to another class of goods. Our stove is an everyday affair, and is the more interesting on that account.

The other stoves shown in our group are of iron, and for this reason are even more interesting than the one described. Much of the work done on them is very beautiful, and if the castings are as good as the design calls for, they must be very splendid constructions. In every case the upper section seems to be superfluous, but in the stove on the extreme right of the group it is so managed as to make it as ornamental as a cabinet. With such examples before them of everyday German work, the writers of American stove catalogues would do well to fold their flapping wings and settle down to plain facts. Our little and feeble attempts at artistic ironwork sink into insignificance beside the stoves which have been for years in use abroad.

A GROUP OF NEW GERMAN STOVES.

Mining in Corea.

A report of the British Minister in Japan contains some interesting information concerning mining in Corea, from which we extract the following:

A minute examination of the map of Corea shows that the country in the three circuits, Hwan-hai-do, Chöl-la-do and Kyön-sang-do, is flat almost throughout, and therefore it is not probable that there are any places which produce coal. It may be well to make another investigation next year. Corea is mostly mountainous, and there is little flat country. The agriculturists, consequently, find cultivation difficult. The population increases every day, however, and there is no other industry for them to follow. It is well, therefore, to take precautions in time, and to remove the interdict on trade by sea, and thus extend the means of earning a livelihood, open up the mines, and provide for the wants of the country. This, being the means by which the country can be made rich and powerful, is a most urgent matter. Copper and iron are mostly the produce of the mines, and there is clear evidence of the good quality of the ore. The local system of obtaining ore from a mine is to do first what is easiest, and leave to the last what is difficult. They dig away at the mine, and the hole gets gradually deeper; but there is no ventilation, and no means of furnishing a light. There are many springs which discharge water into the workings, and no appliances for getting rid of this water. If the mine is, under these circumstances, abandoned, the capital put into it is lost, while, on the other hand, it can only be worked at the risk of life. No profit can thus be made out of these mines under the local method of working them. If, however, machinery is employed, and the mines worked in other respects according to modern methods, the difficulties of light and water will be avoided, the miners can work as they please, the workings will be developed, the number of men employed will increase, and more and more ore will be extracted from the mine. Under this system the hardest is put first and the easiest last.

If modern methods are followed much capital will be required for the erection of foreign machinery, and in employing foreign artisans care must be taken to select good men. Japanese furnaces for forging iron are used by the country people, but they are useless. They engage as workmen coal miners who work the coal mines at Ho-puk, but no practical results are visible; therefore, although there is plenty of coal in the mines in the various perfectures, there is no coal to be obtained in the vicinity of the mines which can be used for the purpose of smelting the ore, and, moreover, as the ore is found in lofty and steep mountain ranges, it is not easy to transport it. The working of the mines of Corea is attended with great difficulty, which railways are the only means of overcoming; and it is pointed out that, when there is no coal in the country which produces the five metals (*i. e.*, gold, silver, copper, iron and lead), either the ore must be transported to where the coal is, or the latter must be taken to the other mines. One of the two things must be done. In working the various five metal mines the first thing to be done is to look for places where there is coal; the second is to construct connecting lines of railways, and to carry out these objects a great deal of capital will be needed.

A firm is now erecting at Johnson City, Tenn., what, it is said, will be the largest tannery in the world.

How India Pays for England's "Free Trade."

English writers on political economy invariably select England, which, superficially considered, appears in a prosperous condition, as a brilliant example of the benefits resulting from the adoption of a free-trade policy. England, as we all know, has an enormously expensive Government, and it is evident that the revenue raised by a duty upon a few articles, as, for example, tea and coffee, a tax upon liquors and direct tax upon her people, does not, as claimed, suffice to cover expenses. The unknown source of the enormous income necessary is now found to be the excessive taxation of the 200,000,000 inhabitants of British India. What this tax is, to what extent and how levied, is the subject of an article in the *Nineteenth Century*, and is written by Mr. J. Seymour Keay, a gentleman who has long been a resident of India. We quote as follows:

The connection between England and India is the momentous fact of cotemporary history. In order to maintain the connection, England imposed a debt of £160,000,000 upon the Indian people, and now raises from them a revenue of $350,000,000 annually to pay for the system of government which it has set up. England charges them $80,000,000 yearly for an army to preserve in their midst her alien dominion, avowedly not resting on their suffrages. Much of the taxation levied on the Indian people has been to contribute to no less than eight English wars within the last 40 years—two with New Zealand, two with China and one with Russia, Abyssinia, Persia and Egypt, respectively; and India's revenues are at this moment expended on supporting British agencies in China, Persia, Zanzibar and Aden—the last named alone costing an immense sum annually. Besides these, India is charged large sums for military depots in England, and for British war ships cruising in Eastern waters. Sir Charles Trevelyan, in his evidence before the Parliamentary Committee on Indian Finance, which sat in 1873, thus explained the reason: "We charge Canada, Australia, the Cape of Good Hope, and the whole round of the British Colonies, nothing'; why should we charge India anything? The only real difference is that Canada or Australia would not bear it, whereas India is at our mercy, and we can charge her what we like." While the whole European population in India, exclusive of the rank and file of the army, numbers only 68,000, no less than 25,402 of them hold Government posts, for which they draw the enormous sum of $63,882,865 yearly from the Indian Treasury. It must be remembered, also, that this does not reveal one-half the income drawn by Englishmen from the squalid Indian peasantry. There must be added the pay of the rank and file of the English army, the cost of Government stores imported from England, the interest on the public debt and on the guaranteed railways—almost exclusively held by Europeans—and the heavy loss by exchange in remittances to that country. With these items and allowances of less than $500 a year, the direct tribute wrung from the Indian Treasury by her disinterested governors mounts up to no less than $150,000,000 yearly. And this is wholly apart from the amount (estimated at $90,000,000) taken every year by Englishmen as profits on exports, imports, insurance, and other branches of trade between England and India.

A native army of 125,000 men, though of no value in the presence of the enemy, is of great value as providing appointments for 2800 British officers. That it requires 64,000 English troops to watch it is only an additional advantage, for these troops in their turn furnish appointments for other 3200 British officers. Mr. John Bright's return, already referred to, discloses the fact that $25,680,000 of the Indian revenues are annually expended on military pay and allowances to 8103 English officers. That England has debauched the interests of the people is shown by the fact that in a Blue Book presented to Parliament in 1873 a judge thus enumerates the practices which have become common under shelter of our procedure:

"Tampering with documents, suborning witnesses, garbling accounts, obtaining bonds and refusing consideration, taking payments and denying them in court, never giving receipts, dunning people into grossly one-sided compromises of their debts, and then refusing delivery of their bonds, in order to file suits on them; carrying away whole crops, bullocks and stores of grain, and then flatly denying all knowledge of them. These frauds are practiced with impunity nine times out of ten."

These people are getting poorer every year instead of richer. Yet England has steadily increased their taxation in the last 40 years from $95,000,000 to $350,000,000 annually, although their poverty is such that its extent can hardly be realized by people in this country. The average annual income of the people of India is now less than $10 per head, of which wretched pittance England extorts $2.50 for taxation, leaving them for their own support, even in good seasons, a much smaller sum per head than is found absolutely necessary to maintain native prisoners in the Indian criminal gaols. The bulk of the people only manage to exist by universal and unremitting toil. Moreover, hard as is their lot, they cheerfully undertake the task of supporting all their own poor—an obligation which is, I believe, unknown among Western nations. In Europe, among the laboring classes, the husband is in general looked upon as the bread-winner, and there is some rest for the wife, for the child, for the sick and for the old. But in India none are exempt from grinding labor. The expectant mother works among the rice or sugar-cane as long as she possibly can; the nursing mother carries her infant with her to the fields and lays it down close at hand on a little mat or in a hollow tree. The child, as soon as it can toddle; the old, as long as they can totter—all are engaged in the two-fold task of providing a "half-feed" for themselves, and maintaining the Indian Government in splendor. One of the ablest revenue officers in the Madras civil service says:

"The ryots are always in poverty and generally in debt. A ryot lives from hand to mouth. He rarely sees money. His dwelling is a hut of mud walls and thatched roof, and destitute of anything that can be called furniture. His food, and that of his family, is thin porridge made of meal boiled in water, or boiled rice, with a little condiment. The laborer is in a worse condition than the poor ryot above spoken of. In fact, almost the whole of his earnings must necessarily be consumed in a spare allowance of coarse and unvaried food and a bare sufficiency of clothing. The wretched hut he lives in can hardly be valued at all."

They are fully alive to the value of fertilizers, but, as Sir Bartle Frere reported some years ago, "owing to a long course of poverty, in a great many cases they have got out of the habit of using them." The land yields less and less, but there is no abatement—there is a steady increase—in the amount of produce required to be sold for the payment of the taxes. This is the true cause of the great increase of exports, which is pointed to with official jubilation as a proof of the highest prosperity. The result is that the ryot has to eat less and less every year, until he pines and droops in semi-starvation. No less an authority than Sir James Caird, in his official report on the condition of India, concludes as follows:

"The cattle in most parts at certain seasons are half-starved, and their manure is used as fuel. The numbers of people are increasing, and their condition is becoming every 10 years more desperate. Crop follows crop without intermission, so that Indian agriculture is becoming simply a process of exhaustion. An exhausting agriculture and an increasing population must come to a deadlock."

The land tax, producing $550,000,000 from 128,000,000 acres of land, owing to the low production of the soil, averaging something like $7.50 an acre, is really a crushing burden, but is levied both in good and bad seasons, and England exacts nearly cent. per cent. interest on arrears. "The Deccan cultivator," say the commissioners who reported in 1878 on the state of the Deccan districts of the Bombay Presidency, "is indebted on an average to the extent of 16 or 17 years' rent of his holding. He has nothing to hope for, but lives in daily fear of the final catastrophe."

England has confiscated for revenue purposes all the waste lands and uplands—the property of the people from time immemorial. She raises $30,000,000 by means of a stamp act, with provisions so complicated and vexatious, and costs so excessive, as to lead to frequent miscarriages of justice, and—imposed, as it is, on an ignorant population—to foster all kinds of dishonesty and fraud. She recklessly encourages the vices of opium-eating and drunkenness, for the sake of the revenue derived from them.

English officials have long ago arrived at the conclusion that the 250,000,000 of people in India are so poor as to be unable to use any article which is taxable in other countries, and that the only way to compel them to contribute the $350,000,000 annually required by their English masters is by levying enormous taxes on such articles as must be had, as a matter of necessity, for bare life, by the very poorest. Of the elements—air, earth and water—the air has hitherto eluded the grasp of the Indian tax-gatherer. The earth has been made to furnish as much revenue as could be taken from it. There is no resource, therefore, but to take the amount required from the remaining element, the water. Accordingly, if a cultivator dig a well in a dry place, with the object of irrigating some of the adjacent land, not only has he to bear the whole cost of the well, but on all the water he draws from it he has to pay to Government a special assessment, in the shape of a very heavy tax upon the irrigated soil. It is needless to say that such an impost has the effect of greatly discouraging the digging of wells, and by so doing tells heavily against the people in times of drought and famine.

It is not, however, by a tax on fresh water that the enormous wants of the English can be satisfied. The waves of the sea itself have been confiscated and made to contribute an annual subsidy of $35,000,000 to the English Treasury. Salt is a necessity of life of which the poorest require to consume about as much as the richest. A salt tax, therefore, however exorbitant in amount, is calculated to extort nearly as much from the beggar as from the millionaire. In all other countries, and by all other economists, this would be deemed a fatal objection to such an impost. In England, however, it is considered its chief recommendation—its crowning advantage. In the words of a well-known officer: "The salt-tax is a poll-tax which all must pay; it is easily collected, and it is the only means by which you can make the poorer classes in India contribute to the expenses of the Government." Accordingly the Government of England assert a monopoly even of the natural process of salt manufacture by solar evaporation on the sea shore. This monopoly they defend by stringent penal enactments, and by these means they succeed in levying a tax of about 3000 per cent. upon the value of all the salt consumed by 250,000,000 people. They compel the poorest classes in India to pay them no less than 75 cents for every pennyworth of salt—a charge which amounts to from 5 to 8 per cent. of the whole yearly earnings of the Indian agricultural laborer.

The sufferings at this moment inflicted by England on a sixth part of the human race by the salt monopoly are such as, if they could be presented at one view, would cover us with shame before the civilized world. Within the last 40 years we have trebled our taxation of this first necessary of life on the poorest peasantry on the face of the earth. From this cause not only are the cattle fast deteriorating, but the health of the people themselves is largely suffering. Scurvy and leprosy, unsightly blotches and growths, congential deformities, and a peculiar lankness and misshapement of limb are all ascribed by the poor to their deprivation of salt.

"I despair," says Mr. Keay, in conclusion, "of giving any adequate idea of the miseries inflicted on a helpless people, too poor to consume aught save the bare necessaries of life, by this method of compelling them, on pain, as it were, of death itself, to contribute to the support of an expensive Government. Even to wash a little salt out of the earth is held to be a heinous

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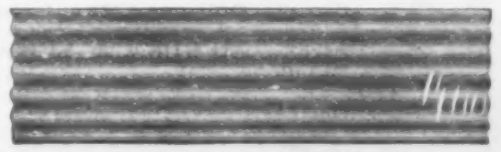

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crime. Here is a story vouched for by members of the Madras Civil Service and quoted in a recent publication: A laborer in Madras having shifted his place of residence, made himself a new mud hut. When he came to occupy the hut he found the earth floor strongly impregnated with saline particles. He scraped up some of the dirt, separated the parts as well as he could, and put the salt he had collected outside to dry. This was observed by a revenue collector and the man was proceeded against. He was imprisoned and was condemned to receive some lashes.

"The mass of poverty-stricken classes in India dare not risk such punishments as these. For bare life, however, salt must be had. It is a crime to separate the precious saline particles from the earth, but it is not a statutable offense to swallow the salt along with the earth itself. Nothing remains, therefore, for many poor people but to consume the revolting compound. Darwin has familiarized us with the fact that there is a class of worms which gain nutriment by passing the soil through their tube-like bodies. It has remained for the British Government of India to reduce large numbers of human beings to the same expedient. In the State of Hyderabad, where I have lived for the past 20 years, the people are entirely dependent on British salt, and great mortality is caused among the poor by their eating earth for the sake of its saline flavor. The practice is common throughout India. I have myself seen a wretched peasant at early dawn seek out a remote and unfrequented spot on a desolate sea-shore, and, in momentary dread of detection, set to work to provide a little salt for his squalid and well-nigh starving household. Far too poor even to possess a spade or trowel, destitute of aught in this world save the rag wrapped around his loins, he scratched in the mud with his naked hands a little trough. The advancing tide soon turned this into a shallow pool, which the hot wind and the glare of the Indian sun dried up before the tide returned. Wearily he wandered nightly to the spot to let in new water. In three or four days, on the bottom of the trough a thin crust of salt was formed. He collected this by scraping it from the clay, and, tying it up in a corner of his waist-cloth, he started for home as if he had gained a prize. He was stopped at the door of his hut by a revenue officer, who confiscated his salt and ordered him into confinement. Wild with hunger and disappointment he made a desperate resistance, wounded the officer, and in the result was condemned to five years' penal servitude.

"England is enjoying a large revenue, but she is wringing it from the very vitals of the people. Their jewels and ornaments, their cattle, and even their cooking-vessels, are fast disappearing. It is officially admitted that upward of 6,000,000 of our Indian fellow-subjects have died of starvation in the last seven years. Six years ago, in the small province of Mysore, no less than 1,500,000 died of starvation out of a population of 54,000,000. With famine and disease and death on every side, no one could fail to be struck with the sublime patience and tender self-denial displayed by the people in the very depth of their distress.

"A state of things exists which is worse than even famine itself—namely, that the slow pangs of hunger, amounting to semi-starvation, are now the lot of at least a fifth part of the people of India every day of every year, even in years of plenty. Here is a faithful description of the present condition of the people, given in evidence before the finance committee, and it is fully confirmed by my own experience: 'In many districts of Goozerat and the Deccan many of the people are emaciated and sinking. I have myself observed their condition, and when interrogated, they have been reduced on account of their inability to provide themselves with sufficient food. Many of them I have known to live on half diet, with only one meal a day, and many of them live on wild herbs and fruit growing on the wild trees. I am not describing a state of famine, but an ordinary state of things.'

"These appalling facts have been officially admitted. No higher authority exists than Dr. W. W. Hunter, C. I. E., Director-General of Statistics at Calcutta. At page 40 of his book entitled 'England's Work in India,' after speaking of the indigence of four-fifths of the population, he adds the terrible statement: 'The remaining fifth, or 40,000,000 people, go through life on insufficient food.'

"In conclusion I would ask: Can any one help feeling intense sympathy with the people of India—a sixth part of the human race—mute and helpless under such frightful sufferings? Our countrymen are ruthlessly maintaining a system of organized extortion, piercing even to the dividing asunder of soul and spirit. The time is fast approaching when in their extremity the great reformer—hunger—will make the people band together with the courage of despair, and a catastrophe may result the like of which the world has never seen."

Miners' Safety Lamps.

In the "Selected Papers of the British Institution of Civil Engineers" we find a condensed translation of an article on the above subject by M. J. B. Marsaut, which is replete with interesting matter. We quote as follows:

In an elaborate essay by the engineer-in-chief of the Bességes Collieries, Gard, in the South of France, this important subject is investigated with characteristic care, thoroughness and discriminating fairness. Belgium having in 1864 decreed the use of a standard pattern of the Mueseler safety lamp for her deep and fiery coal-pits, the same lamp has come into extensive use in France also, after having undergone a series of experiments at the hands of Messrs. Mallard and Le Chatelier, on behalf of the French Fire-damp Commission. The Belgian Mueseler, which has the usual internal funnel or taper chimney of solid sheet-metal, supported above the wick by a horizontal annular diaphragm of wire gauze, is subject to the serious inconvenience of going out when tilted; its usefulness is thereby greatly curtailed, particularly where there is any haulage on inclined planes. Ten years ago M. Marsaut's own experiments led him to modify the Mueseler lamp, by discarding the diaphragm while retaining the chimney; a sheet-iron casing was also added

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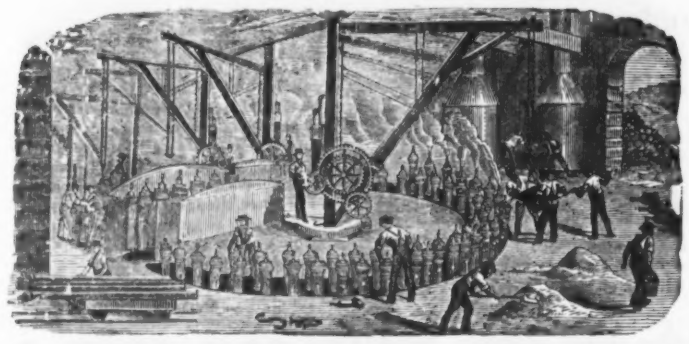

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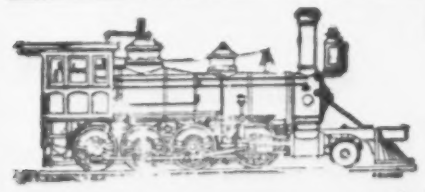

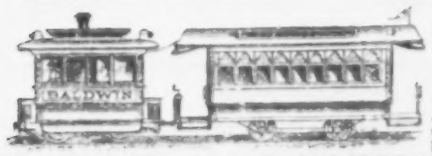

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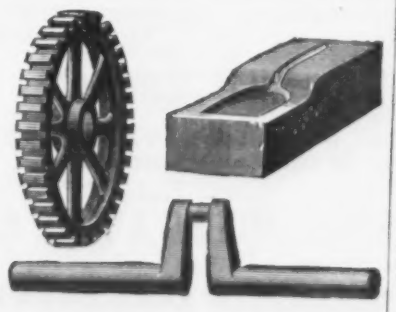

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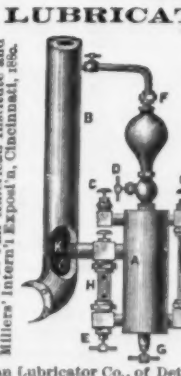

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outside the gauze cylinder, to prevent flame from passing outward through it when exposed to a current of fire-damp, and a movable ring was fitted round the circle of the air inlets, for closing them all simultaneously, so as to extinguish the lamp. This lamp does not go out when tilted; does go out in fire-damp, and does not let flame pass outward, even when exposed to strong currents of fire-damp in any direction. The only inconvenience noted by the French Fire-Damp Commission, when recording their high commendation of the lamp, was that the sheet-iron casing prevents its being seen at a glance whether the lamp is all in proper order inside it.

Renewing his efforts at improvement, the author lately entered upon a further extensive series of experiments at Bessèges. The practical conclusions derived from these experiments are summarized as follows: With the large Davy lamp used in the Gard district, and with other lamps of the same kind, an explosive still atmosphere outside is fired by an explosion inside the lamp. The addition of a second gauze cylinder to these lamps diminishes considerably the frequency of outside explosions, but is powerless to prevent them. The flame seems to pass out through the cap of the gauze cylinder rather than elsewhere, whence it is well to add another layer or two of gauze at this weak part. The outside atmosphere is more readily fired by explosion within a lamp in which the wick is burning low; the prevalent practice of lowering the wick on encountering fire-damp is consequently objectionable; it is better to remove the lamp slowly, keeping the wick at its usual hight. Large lamps are more dangerous than small ones, because the volume of explosive mixture they contain increases as the cube of their size, while the area of gauze or of outlet for the flame to pass through increases as the square only. The glass cylinder in the Mueseler and other lamps, though giving a better light, renders the explosions inside more violent, because the explosive mixture is thereby more confined, so that the lamp becomes a sort of miniature cannon; the glass should therefore be kept as small as possible, particularly in hight. The Belgian Mueseler, considered the safest lamp in use hitherto, sometimes explodes a still atmosphere of fire-damp outside it. Lamps with glasses are dangerous when the wick burns low, for the same reason as the Davy; in the Mueseler particularly the flame can then more readily pass up through the chimney, and so get to the upper side of the gauge diaphragm. The plan long in vogue at Bessèges, of ascertaining the presence of fire-damp by measuring the elongation of the lamp's full flame, is safer than reducing the flame to the utmost for the purpose of seeing the blue cap of gas better; the elongation of the flame is almost always a sufficient indication. When a glass lamp is lifted up into an explosive atmosphere, it should be held there steadily till it goes out, especially in the case of lamps having their air-inlet at top, instead of being immediately withdrawn again, as would intuitively be done either through fear or to keep it alight, for a downward movement seems to have the effect of churning the gas inside the gauge, and so rendering its explosions more violent, and thereby more dangerous.

As soon as ever the gas burns very visibly in a lamp, and shows its characteristic tuft of flame, there is no fear of internal explosion occurring. It is particularly dangerous for a lamp to get suddenly filled with explosive mixture by a current blowing the flame against one side, or for the lamp itself to be tilted in such an asmosphere; any arrangement for checking undue access of gas to the lamp is a safeguard. The whole of the air-inlets should be protected by at least a double layer of wire gauze, even in the Mueseler lamp with its chimney, which latter does not always isolate the flame; then if the inner gauze ever gets red-hot, the outer still serves as a protection. The confined space inside a lamp should be kept as small as possible, but the gauze, which cools down the gases passing out through it when the lamp explodes inside, should present as large an extent of surface as can be; hence lamps are not to be relied on which have a tall glass surmounted by a dwarf gauze, such as the big Cosset-Dubrulle, the Bainbridge, and others like them. Lamps should be made of as small diameter as possible, and should carry as large a flame as they can without getting too hot; the aim should be to make a lamp behave as much as possible like a mere chimney. In glass lamps with air-inlet at top, the wick-holder should be tall enough to raise the flame as high as can be inside the glass; a neutral space is thus left in the bottom of the lamp, whereby the force of explosion within the lamp is mitigated. A chimney in a lamp is attended with more or less risk. The slightest modification in form or arrangement of a lamp may make a considerable difference in its safety.

In its present improved form the Marsaut safety lamp has a strong glass cylinder, 2.44 inches high, 1.65 inches diameter and .31 inch thick, secured in a protecting cage on the top of the oil reservoir, as in the Mueseler lamp; but the Mueseler chimney, and the gauze diaphragm that carries it, are done away with. Surmounting the glass cylinder, and flush with its inside circumference, is an inner gauze cylinder, 4 inches high, tapering slightly smaller upward, and closed at top by a gauze diaphragm. An outer gauze cylinder, about ¼ inch larger in diameter, ¾ inch taller, and similarly closed at top, incases the inner gauze, and is fixed at bottom into the copper ring that forms the upper ring of the cage holding the glass. The mesh of the gauze is 930 holes per square inch, or 30½ per lineal inch. The entire gauze is shielded by an external sheet-iron casing, which can be lifted off at pleasure, having inlet holes round the bottom for the air to enter the lamp, and outlet apertures at top. While the general shape and construction of the Mueseler lamp, as sanctioned by practice, are thus preserved in the Marsaut, the small horizontal annular diaphragm of gauze supporting the chimney in the former is replaced in the latter by the inner gauze cylinder, which presents a far larger cooling surface for the hot gases inside the lamp to pass out through. Additional safety can be secured by further covering the flap top of the inner gauze cylinder with a gauze hood, so as to double the thickness of gauze at that part, upon which the force of an explosion inside the lamp comes most direct. A third complete cylinder of gauze can even be added, if desired, as an extra precaution, but two are considered safe enough by the author, and preferable generally.

The advantages of the Marsaut lamp are that it seldom goes out when tilted, and not at all in an upward current of air, nor does it explode externally a strong current of gas blowing upon it in any direction whatever. It does not fire an explosive still mixture of air and lighting gas, as has been proved by upward of 12,000 trials at Bessèges, when most of the other lamps in use did so, the Belgian Mueseler included. The outside casing effectually protects the gauze from getting injured, clogged with dust or splashed, and whenever the lamp explodes inside, the casing retards the escape of the burnt gases, which thus help to put the lamp out. By simply covering with the hand the inlet or outlet holes in the casing, the lamp can readily be put out whenever desired.

In the trials made of the Marsaut lamp at Bessèges, an explosive mixture was employed of air and of lighting gas, which latter fires more readily than fire-damp; and the wick being reduced below its usual flame, the conditions were thus more trying than are met with underground. With three forms of the Marsaut lamp, testing two lamps of each form, upward of 6000 trials failed to produce a single explosion; whereas 15 Belgian Mueselers, tested simultaneously, each of them about a hundred times over, let the flame pass through the horizontal gauze diaphragm in 31 per cent. of the trials, and in 2½ per cent. produced explosion outside of the lamp. Still severer trials were also made by mixing air with lighting gas in their most highly explosive proportions—namely, 100 volumes of air to 20 volumes of gas—and exploding the still mixture inside the lamps by an electric spark. Under this excessive test, the large Davy lamp used in the Gard district exploded the mixture outside it every time; the Boty, Clanny, and Belgian Mueseler, and the Marsaut lamp with two gauze cylinders, almost every time; but 12 trials of the Marsaut with three gauzes, and 10 of the fire-trier's Davy, gave not a single explosion outside. These tests, and the one preceding, point unmistakably the desirability of reducing to the utmost both the total internal volume of a safety-lamp, and also the hight of the glass, since the blind space inclosed by the glass acts like a cannon in propelling the inside explosion violently against the gauze, and so driving the flame out through it. How great an effect the hight of the wick in the glass has was proved by these experiments, a variation of less than 0.4 inch in the Boty lamp being sufficient to produce or prevent explosion outside. The trials also show that the Davy of small diameter, still used in England by the fire-trier, but abandoned in the Anzin and the Bessèges collieries, presents important advantages, and if sufficiently protected against strong currents would possess a high degree of safety. They further demonstrate that the electric spark is essentially dangerous in fiery mines, which should be borne in mind in any attempts to introduce electric lighting into colliery workings.

Investigating experimentally the mesh and shape of the wire-gauze cylinder, the author concludes that, for the same total area of apertures per square inch, gauze of finer mesh is safer than a coarser and heavier make. The lamp should be made inside as nearly cylindrical as possible throughout its entire hight, and in particular the bottom of the gauze should be flush with the inner circumference of the glass. Any narrowing at this part, by the insertion of a horizontal annular diaphragm projecting inward, or by contracting the gauze cylinder to a smaller diameter than the glass, is objectionable, doubtless because the explosive mixture inside the lamp gets thereby so churned up as to augment enormously the rapidity with which it explodes, enabling the flame consequently to pass out through the gauze. The lighting power seems to depend partially upon the metal of which the lamps are made, a brass lamp being found to give only 70 per cent. of the light obtained from the same make in wrought iron. The difference is no doubt connected with heat-conducting capacity. English lamps are generally made of brass, and German of wrought iron. M. Marsaut is inclined to think steel, or perhaps malleable cast iron, would be advantageous.

The Testing of Locomotives.

The *Railway Review*, in a recent issue, strongly urges the experimental testing of locomotives, and in view of the importance attached to the subject, the following, taken from our contemporary, may prove interesting:

The record of the tests should include a detailed description of the locomotive and of the cars drawn, as regards type, dimensions and weights. The data of the trial paper should include the weight and temperature of feed water, the weight and chemical composition of the fuel, the weight of ashes, the pressure and quality as to dryness of steam in boiler at different intervals, the temperature of the fire and up-take, the barometric pressure and humidity of the atmosphere. The pressures and temperatures, as well as the indicator cards, should be taken at regular intervals, as well as the number of strokes of the piston. Of course the position of the throttle and like particulars in regard to valves should be carefully noted.

When these data are all at hand it becomes no difficult matter to determine the actual performance of the locomotive—that is, to determine the pounds of steam and fuel consumed per horse-power per hour, and to ascribe the nature of the result to its true causes. The reason that it is necessary, besides knowing the weight of fuel, to know the weight of ashes and the chemical constitution of coal, and perhaps of the products of combustion as well, is that thus the engineer is enabled to learn whether the good or poor performance of the locomotive is attributable to the quality of the fuel, to the state of perfection or imperfection of the combustion, or to the design or proportions of the boiler, and thus to locate the cause of excellence or the reverse to some special feature of the boiler or of the fuel. It may, however, prove that all these conditions are normal and

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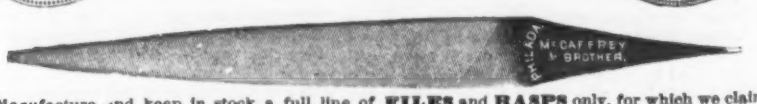

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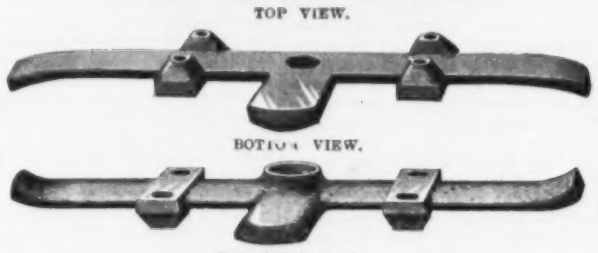

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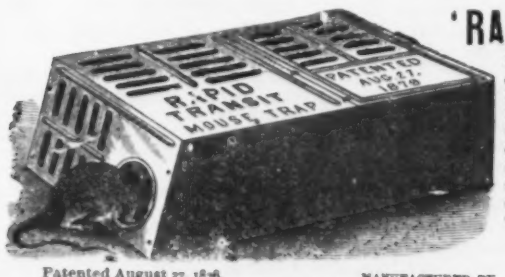

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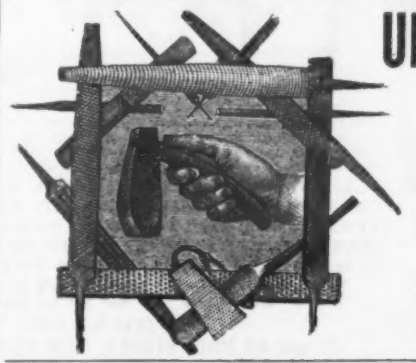

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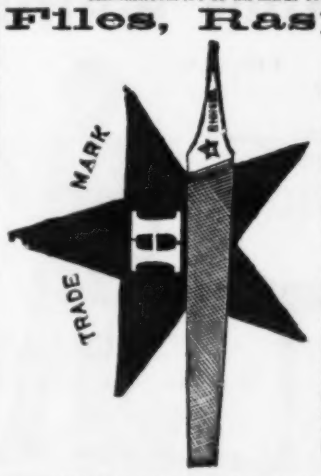

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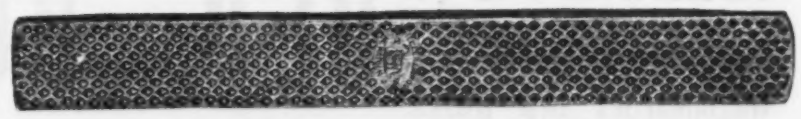

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do not account for the special result achieved. The weight of steam, taken in connection with the records of the indicator card, then furnishes the clew.

It is necessary to know the quality of the steam, for the water feed to the boiler may be evaporated into dry steam, or the steam may be wet or superheated. If the steam is wet it should count against the boiler, if superheated in favor of it, and *vice versa* in judging of the efficiency of the engine proper. The difference between the boiler pressure and initial pressure in cylinder, as shown by the indicator card, may prove an insufficient diameter of the supply pipe; an excessive fall of pressure at admission may prove insufficient port area for the special conditions of steam use, the cut-off may not be the most advantageous, nor may the cushioning, back pressure or initial pressure carried be the best. By taking the same locomotive and running it under different conditions of steam use and service, the effect of any one special condition can be determined, and that expressed in a percentage of efficiency or usefulness. Of course good judgment and sound engineering knowledge are essentials to arrive at correct conclusions, but without the records of such complete experimental trials, good judgment and sound engineering knowledge, as far as the economical use of steam in locomotives is concerned, are of comparatively little avail.

The mere mention of some of the data which it is desirable and necessary to determine, and for the obtaining of which often special devices must be designed—indeed, each test on an engine demanding some feature calling upon originality of mind—is sufficient to show that the person making the test must necessarily be a thorough, experienced engineer. It may appear as one of the drawbacks to some people, in regard to this mode of testing, that it requires trained ability, but without such competent leadership no results of value can be attained. It is true that this mode of testing demands more intelligence and capacity than the system which was advocated some time ago by one of our contemporaries, which amounted, in fine, to obtaining the fuel consumed per train mile, and which, as it stated, any apprentice of fair intelligence could supervise. But we are inclined to think that the results attained will be of value in the former case, and not in the latter.

By the former method of testing conclusions will be arrived at which will locate troubles, show direction of advance, stimulate the most economical use of steam, and secure greater perfection in the devices and design of locomotives. The latter method—or lack of method—which our contemporary advocated so strongly, is virtually good for naught; for what does it matter if little or much fuel is used per mile run if we know not precisely to what this economy or waste is attributable, and whether the boiler or engine, or any of its special parts, or the fuel, &c., are at fault. No remedy is at hand, and blind groping in the dark on chance of striking the remedy is the result, and virtually the "apprentice" system of test is no test at all, and reveals nothing. Let us have a class of experimental testing of locomotives, which equals the best models of stationary practice, and let the test be undertaken, as important trials are in stationary practice, by specialists of undoubted ability and experience. Then will an improvement in locomotive practice be developed fully equal to such as have been already accomplished in stationary practice.

Preservation of Exposed Ironwork.

Referring to the corrosion of ironwork, more particularly that which occurs in bridge-work, Mr. Theodore Cooper recently made the following remarks in a paper read before the American Society of Civil Engineers:

The rusting or corrosion of wrought iron at ordinary temperatures is a very important matter of consideration. The corrosion of an iron rod set in sulphur is not uncommon. The explanation is a simple one. There is no chemical action between pure sulphur and iron at ordinary temperatures, these two elements only uniting at high temperatures—above red heat. But commercial sulphur generally contains sulphuric and sulphurous acids, produced by the oxidation of the sulphur during its process of sublimation. These acids are the immediate corroding agents when the impure sulphur and iron are in contact. Such sulphur should be thoroughly washed before being used. In general, the rusting or corrosion of iron only takes place in the presence of an acid and moisture. In dry air at common temperatures, or under pure water free from air or carbonic acid, iron does not oxidize. Neither does it oxidize in dry carbonic acid gas, nor to any great extent, if at all, in damp oxygen. But in the presence of moisture and many acids the corrosion takes place readily and continuously. The most common agent toward corrosion is carbonic acid gas. Professor Calvert found that damp air, with a slight addition of carbonic acid, produced a rapid oxidation, the process being, first, a production of protoxide of iron, changing to the carbonate and then passing to the hydrated oxide or ordinary rust. Though the carbonic acid was the active agent in bringing about the combination, the carbonate of iron remained in small quantity—an apparent process of transfer or disposing influence. As our atmosphere contains carbonic acid gas and aqueous vapor, and as all natural waters contain air and generally carbonic acid in solution, the rusting of iron is universal. It varies, however, in the degree of rapidity, according to the conditions of the special location, the dryness of the air in certain regions making the action an exceedingly slow one, while in others the excess of moisture and gaseous acids produce an exceedingly rapid corroding action. In tubular bridges, tunnels covered with iron girders and the overhead parts of bridges, the ironwork is especially subject to corrosion, due to the excessive amount of moisture (condensed steam), carbonic acid, and frequently sulphurous acid, discharged upon the exposed surfaces from the locomotives.

While the sulphurous acid, if present, is a very active agent in promoting corrosion, the greatest factor is undoubtedly the carbonic acid gas. An analysis of a sample of rust taken from the Conway bridge gave:

	Per cent.
Sesquioxide of iron	93.094
Protoxide of iron	5.810
Carbonate of iron	0.970
Silica	0.196

Mr. William Kent found in rust taken from a Pennsylvania railroad bridge, where it was exposed to the action of escaping gases, carbonic acid in considerable quantities, but only traces of sulphuric and sulphurous acids. Under fresh or under salt water the corrosion of iron is largely influenced by the presence and amount of air and carbonic acid gas. The action generally appears to be greater where the iron is alternately wet and dry. The caustic alkalies and alkaline earths prevent the oxidation of iron by neutralizing the acids. Iron, therefore, does not corrode in alkaline solutions or when embedded in lime. The testimony in regard to the action of a thin coating of lime whitewash upon iron is contradictory. The writer has seen many cases where whitewash has corroded iron rapidly; others testify to its thorough preservative qualities. The difference may consist in the addition of other ingredients to the solution. For example, it is often customary for whitewashers to add common salt to the lime solution to increase the hardness of the coating. Again, others add glue or similar material to the lime to increase its adhesive qualities. The one containing salt would undoubtedly corrode the iron, and the other with the glue would not do so. Whether a thin layer of lime only, after the lime had taken up its full equivalent of carbonic acid, would continue to act as a preservative, is doubtful, for, from its hygroscopic character, it would readily convey moisture charged with the destructive acid into the surfaces of the metal. As to hydraulic cement, the evidence is not so positive. Thomas C. Clarke says, in his report upon the Niagara bridge, that on uncovering the anchorage links he found the iron as perfect as when put there, without the slightest sign of rust, though the mortar was saturated with moisture and the whole foundation evidently surrounded by water-bearing strata of rock. Gen. M. C. Meigs says he found a wrought-iron pipe, laid in cement concrete, honeycombed and leaky after 12 years' time, and he learns from plumbers that in their experience American cements corrode iron. This different testimony in regard to the action of cements may possibly be explained by the different circumstances of each case—such as the relative compactness and depth of the cement in which the iron is imbedded. There is a possibility, however, that in certain cements the silicates may be soluble in water, and thus furnish the acid agent toward corrosion. Mineral wool made from furnace slag very closely approximating the composition of hydraulic cements has been found in certain cases to corrode iron very rapidly. It was claimed that this was entirely due to the hygroscopic character of this material, but recent instances reported to me would appear to lead to the belief that the wool in the presence of water not only corrodes the iron, but also disintegrates and hardens into a solid mass. Wet coal ashes corrode iron very rapidly. William Metcalf states that a wrought-iron pipe buried in coal ashes was completely eaten away in one years' time.

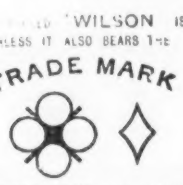
As a curious instance of the slight causes which promote oxidation, the experience of a manufacturer of fine cutlery was related to me. He found at one time a large portion of his goods being returned to him as in damaged condition. Instead of the bright, clean surfaces for which such articles are noted, he found rusty, deeply-oxidized blades. After much anxiety and watching to determine the cause, whether it was damp paper, the ill-will of some of his agents, or other cause, it was located upon the man who sorted and wrapped the knives into packages. Everything he touched was found to rust, from the peculiar acid character of his skin exhalations. Similarly, it is well known that some persons cannot carry pocket-knives or bright iron articles, as keys, &c., about their person without becoming very rusty. The rusting of iron proceeds with great rapidity after it has once commenced, because the rust of iron is a ready absorber of moisture and gases, and it thus constantly conveys new elements of destruction into the yet unchanged metal. It is to this fact that the great difference in the rusting of used and unused rails, machinery and tools is due. The jars and vibrations to which the one is subjected keep the surfaces clear of accumulated rust, that would act as storage reservoirs for the corroding elements. There is often much misconception in regard to the amount of iron contained in a certain thickness of rust. Dense, compact rust may contain enough iron to equal one-fourth or one-fifth of its thickness, but the looser and more common kind of rust will not contain over one-eighth of its thickness in pure iron. In other words, rust ¼ inch in thickness will contain from $\frac{1}{16}$ to $\frac{1}{32}$ inch of iron, according to the density of the rust.

The preservation of iron from corrosion is a subject of vast importance, and has given rise to many expedients, more or less effective, such as alloying iron with other metals, as chromium, tin or copper, arsenic, &c., to obtain a less corrodible metal; plating the surfaces with other less oxidizable metals, as nickel, tin, copper, silver or gold; coating with zinc, a metal that is readily oxidized upon the surface, but whose oxide, when formed, becomes a protection to any further oxidation (when not subject to other acids than carbonic acid gas); coating with fused mineral enamels; covering with lacquers; coating with magnetic oxide of iron by the processes of Barff or Bower, by subjecting to high temperatures and the presence of moisture; and, lastly, the use of paints of innumerable characters. For general engineering structures the coating given to iron surfaces for their protection against corrosion must be not only moderate in cost, but of such a character as to be readily renewed when removed by accident or design. It must also differ from zinc in being able to resist the corroding action of sulphurous acid gas and the chlorides in locations where these may occur. This practically reduces us to the use of paints (using this term to include not only the paints proper, but varnishes, oils and other materials applied in a liquid form). The relative merits of the

Cutlery.

WILSON'S CELEBRATED
BUTCHERS' KNIVES,
BUTCHERS' STEELS,
AND
SHOE KNIVES.

"WILSON" IS GENUINE UNLESS IT ALSO BEARS THE TRADE MARK



"FOUR PEPPERCORNS AND A DIAMOND."

GRANTED A.D. 1766 BY THE CORPORATION OF CUTLERS OF SHEFFIELD, AND PROTECTED BY ACT OF PARLIAMENT.

REGISTERED ALSO AT WASHINGTON, U.S. ACCORDING TO ACT OF CONGRESS.

ALSO AT LEIPZIG, IN ACCORDANCE WITH THE GERMAN TRADE MARKS' REGISTRATION ACT.

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It having come to the knowledge of JOHN WILSON that Counterfeit Butchers' Knives, purporting to be of his manufacture, are being sold in the United States, he hereby cautions all purchasers of his Knives and Steels to be on the alert against such impositions.

JOHN WILSON also hereby gives NOTICE, that it is his determination to institute Legal Proceedings against any person or persons who may be detected infringing his Trade Mark, and with that view he will handsomely reward anyone supplying such evidence as will lead to the conviction of the Makers and Vendors of the said Spurious Imitations.

WORKS:—SYCAMORE ST., SHEFFIELD, ENGLAND. Established 1750

J. R. TORREY,
Manufacturer of Razor Strops & Dressing Cases.
Sole Agent for Worcester Cutlery Co.
Importer of Fine Razor Hones.

American Made Razors.
WARRANTED BEST CUTTERS IN THE WORLD.
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Factories: WORCESTER, MASS.
Send for Price Lists.

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94 Chambers Street, New York,
DEPOT FOR
Collier's Sons Awls,
Also AMERICAN SCREW CO.'S WOOD, MACHINE AND RAIL SCREWS, STOVE AND TIRE BOLTS, RIVETS, &c.,
Also, COLLIER'S SON'S AWLS.

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(LIMITED)
CELEBRATED CUTLERY,
No. 82 Chambers Street, New York.
F. & W. CLATWORTHY, Agents,

The demand for **Joseph Rodgers' & Sons'** productions having considerably increased, they have, in order to meet it, greatly extended their Manufacturing Premises and Steam-power.

To distinguish Articles of **Joseph Rodgers & Sons'** Manufacture, please to see that they bear their Corporate Mark.

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93 Chambers and 75 Reade Streets,
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Robert Sorby & Sons, Sheep Shears, &c.,
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R. & J. Linacre, Grass Hooks and Sickles,
Webster & Horsfall Steel Wire,
GENERAL AGENTS
Western File Co.'s American Files.
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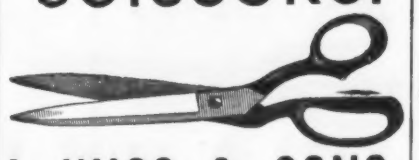
ANVILS CHAIN CUTLERY, GUNS, &c. &c. &c.

A. F. BANNISTER & CO.
SUCCESSORS TO
FURNESS, BANNISTER & CO.,
MANUFACTURERS OF
TABLE CUTLERY,
Cor. Nassau & Sheffield Sts., NEWARK, N. J.

Cutlery.
SHEARS
AND
SCISSORS.



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TAILOR SHEARS,
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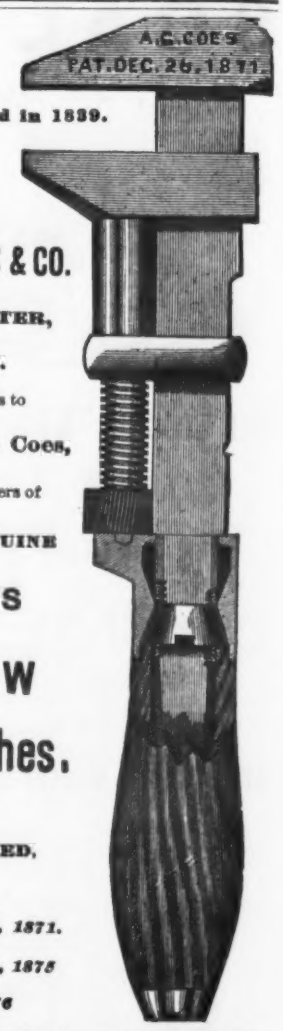

Established in 1839.

A. G. COES & CO.
WORCESTER, MASS.
Successors to
L. & A. G. Coes,
Manufacturers of
THE GENUINE
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Screw Wrenches.

PATENTED,
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The backstrain when the wrench is used is borne by the bar—not by the handle.
The strongest Wrench made, and the only successful Re-enforced Bar.
None genuine unless stamped

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Our Agents, GRAHAM & HAINES, 113 Chamber St., New York, carry a full line of our goods, and will be pleased to serve you at factory prices.

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THE BEST IN THE WORLD.

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EVERY RAZOR IS FULLY WARRANTED BY
DAME, STODDARD & KENDALL,
SUCCESSORS TO
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SOLE AGENTS FOR THE UNITED STATES,
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Patented Articles of Malleable Iron.
Hammer's Malleable Iron Oilers.
Three Sizes. *Nos. 1, 2 & 3.*

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Hammer's Adjustable Clamps.
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NEW pattern Heavy Screw Clamps; strongest in the market.
For sale by all the principal Hardware Dealers.
Send for Price List.
Malleable Iron Castings
of superior quality, and Hardware Specialties in Malleable Iron made to order.
HAMMER & CO.,
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AN IMPROVED
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PRICE OF INSTRUMENT COMPLETE, $20.
Adapted to the use of Architects, Engineers, Masons Builders, Farmers and others.
This instrument is made of Brass and Iron, furnished with both masons' (short metal) and surveyors' tripod, and put up in a handsome wooden box, with strap. The only low-priced Level that can be thoroughly adjusted in the field.

A NEW LEVELING ROD.
This rod is round and made in two sections; is united by a solid screw joint, as if of one length, and has a target. There are two scales, one side being Engineers' (feet, 10ths and 100ths) the other Architects' scale (or, feet, inches and 8ths). Price, $6.

WM. T. COMSTOCK, Manufacturer,
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Circulars and discount to hardware trade furnished to dealers sending their card.

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Unsurpassed for cheapness and durability. Unlike any other make, it combines a perfect lever principle with a blade working in a slotted steel hook.
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Manufacturers of and Wholesale Dealers in
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ONEIDA ALARM TILL.
SUSCEPTIBLE OF OVER 100 CHANGES.
Better than any other Till in the market. No tampering with keys, as it alarms every time a key is touched, unless acquainted with combination. Send for prices and compare this Till with others in the market. No Till-tapping possible.
MANUFACTURED BY
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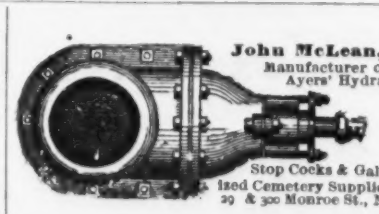

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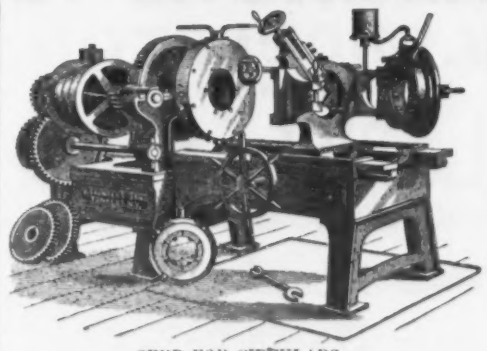

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MANUFACTURERS OF
Pipe Cutting and Threading Machines,
For Pipe Mill and Steam Fitters' Use.
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For Steam Fitting. Also
STEAM AND GAS FITTERS' HAND TOOLS,
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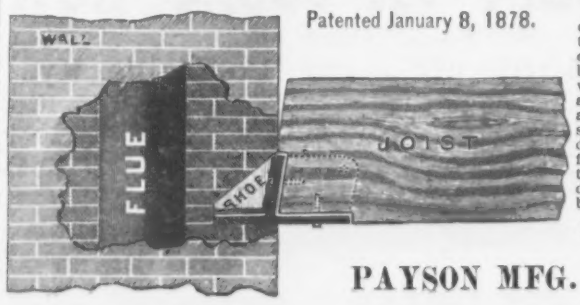
MARTIN'S CASTER,
For heavy bedsteads, book-cases, flower stands, refrigerators, safes, sideboards, desks, or very heavy furniture. Also for heavy ice chests, magazine boxes, stove trucks, heavy showcases, beer boxes, or any very heavy weight. Especially adapted for use in beer bottling, fruit canning, tobacco or warehouse establishments, where heavily-loaded tables need to be moved.

Send for Catalogue.

Our Drawer is so uniform, simple, strong and effective, that it has nearly driven all competition from the field.

Iron Shoes for Flue Joists.
Patented January 8, 1878.



This is a new article of Builders' Hardware, and is applied to the ends of the joists that come opposite to chimney breasts or flues. It dispenses with trimmers and headers and brick arches, saves labor and material, secures greater strength, and obviates the chief danger of fire from defective flues. Where fireplaces occur, the joists are simply halved down and Shoes attached, then boxed to receive the hearth.

Price of Shoes, Per Doz., $4.20.

PAYSON MFG. CO., Chicago.

THE WIRE GOODS CO.
Worcester, Mass.,
MANUFACTURERS OF
SHARP GIMLET POINTED
WIRE GOODS
AND
BELT HOOKS
Wire Straightened and Cut to Length.

RIFLE MANUFACTURERS.
Dealers' Firm Names put on when desired.
GUNS
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WHOLESALE ONLY.
American and English Goods. Fishing Tackle. Winchester and Other American Rifles.
Manufacturers of Leather Gun Cases, Holsters, Bags and Clothing of Leather and Duck,
Dealers who visit us will always find Job Lots.
166 Main St., CINCINNATI.
B. KITTREDGE & CO.

BARNES' SAWS.
Complete Outfits for Workshop Business.
Lathes for Wood or Metal, at
CHARLES E. LITTLE'S,
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59 FULTON ST., NEW YORK.
Descriptive Catalogue Free.

paints depend upon their durability, adhesiveness and imperviousness. The cracking of the paint and want of adhesion produced by too rapid drying of the paint, and the want of adhesion due to the presence of rust upon the surfaces of the iron, are the most frequent causes of failure in the better classes of paints. All rust should be carefully removed from the surfaces of the iron before painting; a coat of raw linseed oil then makes an excellent covering for the surface—elastic, perfectly adherent, and a good durable substratum for future coverings. In order to get our ironwork out of the shops quickly and in a condition to be handled, we resort too often to quick-drying paints, to the future injury of the work. As to the pigment to be used for the covering of this substratum, red lead, oxide of iron, &c., each have their own advocates.

LATEST LEGAL DECISIONS.

FIRE INSURANCE—AUTHORITY OF AGENT TO INSURE.

In an action to recover upon a fire policy the company set up the defense that it was not liable, as it had made no contract of insurance with the plaintiff. On the trial of the case—Armstrong *vs.* State Fire Insurance Co.—it appeared that the application for the policy was taken by an agent of the company, who had authority to take applications for insurance, and receive and receipt for premiums, and forward applications and premiums, and receive from the company policies of insurance when issued, and deliver them to the assured. The application was: "Application is made by J. B. Armstrong for insurance against loss or damage by fire by the State Insurance Co., and the undersigned applicant for the proposed insurance hereby covenants and agrees to accept of the policy issued upon the application and survey, if in accordance therewith;" and the agent gave the plaintiff this receipt: "Received of J. B. Armstrong an application for insurance against loss or damage by fire or lightning by the State Insurance Co., of Des Moins, Iowa, for the sum of $500, for six months, on property mentioned in his application, and he has paid in cash $2, and given a note for $8, payable May 1, 1880," and there was attached to the receipt this clause: "The company will not recognize any understanding between yourself and the agent about the insurance that is not fully stated in your application over your own signature." The note was in the ordinary form and had a stipulation in it: "If not paid at maturity, the said policy (which was specified) shall then cease and determine, and be null and void." The plaintiff offered in evidence, to show authority in the agent to act for the company in making contracts of insurance, an advertising card of the company, furnished by the company as a part of the agent's supplies, upon which his name was printed as agent. The judge refused to allow this card to be read to the jury on the objection of the company that it did not show any power in the agent to insure. The judgment below was for the defendant, and an appeal was taken to the Supreme Court of Iowa, where it was affirmed. The Chief-Justice (Day), in the opinion, said: "1. To treat these papers as a contract of insurance would clearly, it seems to us, be to give them an effect never intended nor contemplated by the parties. The rejection of the card worked the plaintiff no injury. The evidence would have been of no avail, unless it would establish that this agent had power to bind the company by a contract of insurance. It is clear to us that it could not have that effect."

FIRE INSURANCE—VALUE OF GOODS BURNED—DEFENDANT'S EVIDENCE.

A stock of goods, which was insured under a fire policy, for $1600 was destroyed by fire, and a total loss was claimed. The company for its defense pleaded: 1. That the stock was not of more than one-third the value of the amount claimed; 2. That the goods were wilfully burned to obtain the insurance money. On the trial of the case—Livings *vs.* Home Insurance Co.—the plaintiff had no books or papers to show the value of the stock burned, and his only evidence was his recollection thereof. The company offered to prove: 1, By several witnesses that the stock was a small one for the business of the store itself; 2, that it was not larger than the stocks of other stores where $500 would cover them; 3, by a drayman who was familiar with the store, that the stock was not worth more than $500; 4, that the plaintiff had remarked about the time of the the fire that he had but $500 insurance on his stock. All of this evidence was excluded, and a judgment for the amount of the policy was recovered. The company carried the case to the Supreme Court of Michigan, where the judgment was reversed. Judge Marston, in the opinion, said: "In view of the loose manner in which the plaintiff sought to show the value of the stock destroyed, we are of the opinion that this evidence should have been admitted. It had some tendency to fix the value of the stock, and was really the best within the reach of the company. In many cases such evidence would be of but slight importance, while in others, owing to the large loss of goods claimed, and the size of the building and appearance of the stock therein, the evidence would be very strong. The weight of the evidence was a question for the jury, and the evidence should have been admitted."

SALE UNDER EXECUTION—SALE AS ONE LOT OF GOODS—CONVERSION—TITLE.

A sheriff, under an execution against S, levied on his stock of goods and sold them in one parcel, which the law forbids. The owner thereupon brought an action of conversion against him to recover the full value of the goods, on the ground that, as his action in making the sale was unauthorized in law, the appropriation of the goods was a conversion of them. On the trial the sheriff was not allowed to prove that the stock did not belong to the plaintiff, but to a relative, he having denied that it was the property of the plaintiff, but his offer was ruled out. The defendant was beaten, and he carried the case—Stearns *vs.* Vincent—to the Supreme Court of Michigan, where the judgment was reversed. Judge Cooley, in the opinion, said: "There is no authority to preclude this showing which is known to us, and we are confident that it has never been held in any reported case. The mischief of such a doctrine could have no better illustration than the facts of this case If the plaintiff could recover, the real owner may recover also, and if the true title may not be shown under a plea denying the plaintiff's ownership, then any claimant having a mere possession may recover the full value of the property."

PROMISSORY NOTE—ASSIGNMENTS OF PARTS OF THE NOTE—ITS NEGOTIABILITY.

A note for $15,000 was made by A to B, and B then transferred $4000 of the amount to C, and $5267.92 to D. The assignees on the note, not being paid, brought an action against the administrator of the maker to recover the amount assigned to them, and the defense was made that the action was not maintainable upon the assignments, as they were for parts only of the debt. This defense was sustained by the trial court, and the plaintiffs took the case—Golman *vs.* Blum—to the Supreme Court of Texas, where they succeeded in reversing the judgment. Judge West, in the opinion, said: "At common law such a transfer of a part only of the note to two distinct persons, and a reservation of the balance of the instrument to the original payee, could not be recognized, and no action at law could be maintained on such a title by any of the parties to it. With us, however, there is no distinction between legal and equitable rights as to the manner of their assertion; and under the operation of the very liberal rules, as to the joinder of parties plaintiff and of cases of action, heretofore laid down by the court, the rulings of the court below cannot be sustained. The title to this note was in the three owners, B, C and D. The result of these assignments was that the negotiable character of the note was destroyed."

EXEMPTION—PARTNERSHIP DEBT.

An execution was issued against the property of a firm, and each of the partners claimed an exemption therefrom for himself. In a suit to determine their right to do this, the officer holding the execution having disregarded the claim, the trial court decided in favor of the officer. On an appeal of the case—O'Gorman *vs.* Fink—the Supreme Court of Wisconsin sustained the exemption. The Chief Justice (Cole), in the opinion, said: "Partners may agree to sever the property of the firm after execution for the purpose of claiming their respective exemption, and the making of the claim is evidence of such severance."

PARTNERSHIP—DISSOLUTION AND SETTLEMENT—REOPENING SETTLEMENT FOR FRAUD.

After a dissolution of partnership and a settlement of the account between the members, one of them filed a bill in equity to open the settlement and for a new accounting, on the general ground that proper entries had not been made in the firm books, in fraud of the complainant. The Chancellor in this case—Loesser *vs.* Loesser—refused to give any relief on the ground that specific charges of fraud must be made to give the court power to act. An appeal was made to the Court of Appeals of Kentucky, where this ruling was sustained. Judge Prior, in the opinion, said: "In every case where a partner has obtained a fraudulent advantage of his co-partner equity will give relief, but when there has been a settlement of their accounts, in order to attack that settlement for fraud or mistake the specific act of fraud must be alleged, or the manner in which the mistake occurred set forth. If the partner making the settlement and complaining has to rely on a general charge of fraud or mistake, it necessitates an investigation by the Chancellor of the entire partnership accounts to find out for the complaining partner whether or not he has suffered by the fraud or mistake of his co-partner in a settlement that both at the time regarded as final. He has no right to require the Chancellor to make a discovery of fraud upon such a pleading."

Destruction of a Chicago Car Factory.—A fire on Wednesday, August 15, destroyed the five shops of the United States Rolling Stock Co., of Chicago, Ill. The fire began in the planing-mill department, near the engine-room, and the flames rapidly spread throughout the shops, and within an hour all were destroyed. These shops included the planing mill, machine and blacksmith shop, car shop, engine-room and drying-room. The paint shop and the office were saved. Within the mill were 25 cars for the Chicago and Atlantic Railroad, a portion of 1500 cars which had recently been contracted for by that company. The loss is estimated at $200,000 on the buildings and machinery, and $500,000 on lumber. The machinery, buildings and tools were worth $200,000. The stock destroyed was very large and valuable, and included 60 complete cars, valued at $500 each, and about 1,000,000 feet of lumber. The company employed about 500 men. Adolpho Hegewisch, of New York, is president, and C. Benne, of New York, treasurer of the company. The capital stock is $5,000,000, and most of it is in the hands of English stockholders. The insurance on the stock amounted to $1,995,000, and that on the buildings to $55,000.

The new Chinese corvette, the Ting-Yuen, built at Stettin by a German firm, seems to have been constructed on thoroughly Chinese principles. One of its special features is that every time its own guns are fired considerable injury is done to the vessel. At the first discharge of one of the big Krupp guns with which the corvette is armed the effect produced was considerable. Skylights and windows were smashed, a smoke-stack was snapped in two, a thick iron rail on the bridge was wrenched from its place, furniture was shattered to pieces, and an eruption of coals from the bunkers appeared on deck. The effect of a volley was tremendous. Evidently the Ting Yuen is a formidable addition to the imperial navy. Its owners will always have the satisfaction of knowing that, if it is ever taken by the French, it will prove very dangerous to its captors.

H. D. SMITH & CO.,

Plantsville, Conn.,

Manufacturers of the

BEST QUALITY CARRIAGE MAKERS' HARDWARE,

Manufacture the Largest Variety of Forge Carriage Irons, of Best Material and Workmanship.

PRICES LOW FOR QUALITY OF WORK FURNISHED.

SEND FOR PRICE LIST.

SARANAC HORSE NAIL CO.,

PLATTSBURGH, N. Y.

A. WILLIAMS, Pres't and Treas. S. F. VILAS, Vice-Prest. W. S. GUIBORD, Sec'y.

The cuts illustrating this advertisement are of Nails twisted and bent when cold, and are manufactured from best brands Swedish Iron.

DODMAN & BURKE,

No. 100 Chambers Street, New York,

GENERAL AGENTS FOR UNITED STATES.

Eureka Patent Shear

For Cutting Round and Flat Bar Iron and Sheet Metal.

MADE ENTIRELY OF CAST STEEL.

Cheapest and best tool for the purpose ever put on the market.

Send for Descriptive Circular.

EUREKA SHEAR CO.,

811 Market St., Philadelphia, Pa.

Note New Improvements. Round Knurled Nut and Rocker Washer.

J. STEVENS & CO.,

CHICOPEE FALLS, Mass. P. O. Box 224.

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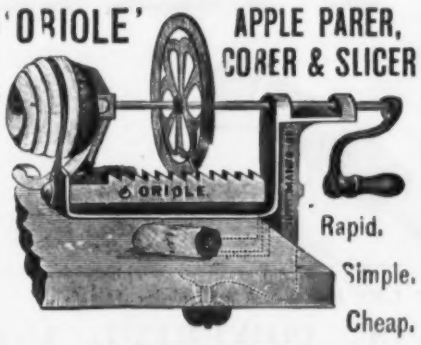

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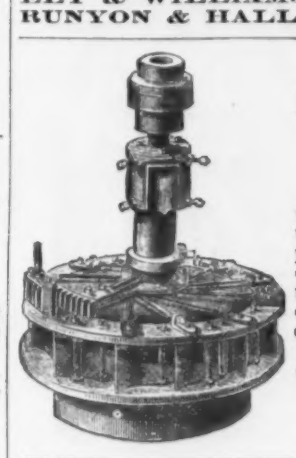

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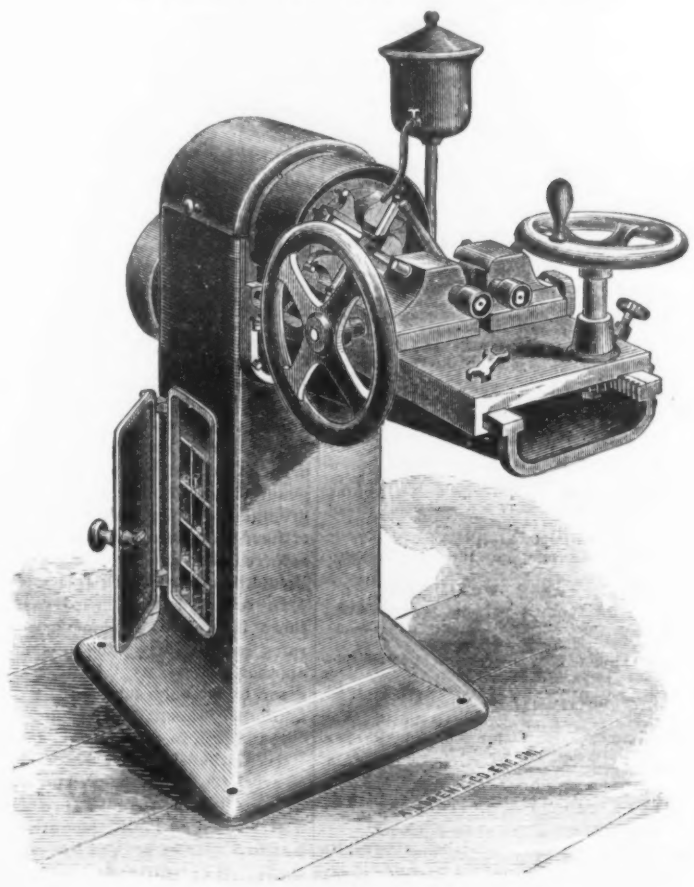
The Bergen Bolt Cutter.

We present herewith a cut showing a bolt-cutting and nut-tapping machine manufactured by the Bergen Tool Co., of Batavia, Ill. This machine is of a new design and cuts from ⅛ inch to 1¼ inches inclusive. The principal feature of the machine is the head, which is similar to the small heads made by this company and so successfully used on screw-cutting machines. It has the same facilities for the automatic opening of the chasers, doing away with the reversing action and mechanism for the same, besides saving from 30 to 50 per cent. in time of cutting threads. The four "chaser blocks" are steel drop forgings suitably hardened, and the position of the cutting points of the chasers when cutting is regulated by four pins attached to a collar on the outside of the spindle. This collar is so arranged that by reversing the motion of the carriage, and so pulling the spindle forward, its connection with the regulating end of the "chaser blocks" is broken and the chasers release the bolt. The spindle is hollow and driven from between the bearings, which allows the covering of the driving gears and head with a neat hood, which catches the oil and keeps dirt out of the bearings and gears. The gripping jaws for holding the work are of a new design, round in form, and have six different sizes and forms of grooves to hold the different sizes of round iron, and also square and hexagon bolt heads and nuts. A rod running alongside of the machine and provided with a suitable stop regulates the position of the carriage in finishing the cut on the bolt. When back to its furthest point a pin on the carriage, acting upon the stop, brings a lever in contact with another on the head, closing the chasers and presenting a stop, which insures a uniformity in the length of the cut. The pump is conveniently arranged in front of and under the front bearing, pumping the oil into a reservoir after being strained twice. The machine is well made and finished in all parts. Messrs Charles H. Besly & Co., of 175 Lake street, Chicago, are the Western agents.



The Bergen Bolt Cutter.

Brush Electric Light Co., Cleveland.

The Brush Electric Light Co. are making rapid progress with their new storage-battery department. The new room where the batteries are to be charged is to contain four 24 x 48 engines. The first one, which was in place at the time of our visit, is made by the Cummer Engine Co. It has an 18-foot balance-wheel for a 44-inch belt. There are three boilers set, with 125 horse-power capacity each. The shaft is very long, 6 inches in diameter, and takes 6-foot pulleys. There are 10 dynamos to be driven by each of the engines, or 40 in all. The floor is of immense strength, and is formed of 15-inch I-beams for floor timbers, covered with pine plank 2 x 6 inches set on edge and bolted together edgewise, so that the thickness of the floor boards will be 6 inches. On top of this is a 1¼-inch oak floor. The roof is of enormous strength, and the most casual observer sees at once that the building is intended to be of marvelous stiffness. It was designed by Mr. Possoms, the superintendent of the company, who asked for $75,000 and no architect in building it. Six-inch shafting is to be suspended from these upper beams, and it is, of course, necessary to have it strong and exceedingly stiff. The belts are, as far as possible, carried up to the upper floor "stagger" and the machines belted downward from that. The main belt runs back at the greatest possible angle, in order to get the maximum weight on the upper pulley. The wall is 20 inches in thickness, with 8-inch pilasters, which gives a stiffness quite equivalent to 28 inches of thickness. The smoke-stack, which is unusually handsome, has a 72-inch flue at the bottom, 70-inch at the top, and is 123 feet in hight. The flue is built separately from the chimney, so that it can go and come if necessary. The chimney, though standing in the center of the building, does not take hold of the walls. The wall and stack are entirely separate. The chimney apparently is built on curved lines, but this merely results from the fact that it has an increased batter from the top to the bottom. The different angles thus obtained, seen from a distance, melt into a curve. The water table is 5 feet above the roof. Beach boilers are used, and there are several bridge walls, each one a little higher than the one preceding. Mr. Possoms means to have this boiler set with a smoke-consumer, but he has sensibly come to the conclusion not to attempt to do it by means of the setting alone, and the result will be attained by taking an entirely green set of firemen and teaching them to fire without making smoke. When this has once been done there will be no difficulty in keeping it up. In walking through the shops we were shown some very beautiful pieces of German silver castings which are necessary for certain parts of the machinery, which, most people know, are exceedingly difficult to accomplish. They are produced here, however, at a surprisingly reasonable rate, the expense being about 7¾ cents per pound. The company are now using about three tons of copper in a day, or, say, $400 worth. Among the novelties on exhibition were a number of headlights built for the Japanese Government. They are run by a current from a No. 7 machine, and are rated at about 35,000 candle-power. These lights have a rotary motion on the stand, with a graduated arc to adjust the direction of the light. Both upper and lower carbons are adjustable, so that the arc always remains stationary in the focus of the reflector, which is 24 inches in diameter, with a focal point 4½ inches from the center. Their headlights are likely to be of great value. The upper carbon is 1¼ inches, and the lower 1½ inches in diameter.

Expansion of California's Trade.—According to the San Francisco *Journal of Commerce*, the trade of California is expanding rapidly, and California merchants are reaching out in all directions, opening up new markets. The extension of railroads North, South, East and West is an important factor in helping on this trade, and it is being availed of eagerly. The ocean traffic is expanding in a corresponding degree. Australia is at last inviting an increase of traffic, though it comes slowly. The Society and other islands of the Pacific are being developed so rapidly as to require regular steam vessels to communicate with us rather than the sailing packets which have long been in service. The coast trade is looming up rapidly from the frigid North to the extreme South. The "West coast trade," as it is called, is promising a great future. Annexed is a tabulated statement of domestic merchandise exported hence for the past 10 years, as declared at the customs district of San Francisco:

	Value.
July 1 to June 30, 1873-74	$ 10,310,722
1874-5	23,599,780
1875-6	22,382,165
1876-7	28,449,130
1877-8	20,617,014
1878-9	30,343,091
1879-80	31,346,641
1880-1	40,311,973
1881-2	46,635,305
1882-3	41,143,363
Grand total	$ 308,921,526

According to an article in one of our English exchanges, it appears that the Russian Government has recently made overtures to one of the two great firms of armor-plate makers of Sheffield, England, respecting the establishment of armor-plate mills at Kolpino, near St. Petersburg, where the material for the Russian navy is now manufactured. It is generally understood that the Sheffield firms referred to usually act in unison in all matters affecting the armor-plate trade, but on this occasion one of the firms is reported to have definitely declined the Russian proposals, while the other firm has the matter now under consideration. The prevailing opinion is that Russia can buy all the armor-plate she needs from the English firms, and the latter are, apparently, strongly opposed to the idea of establishing such mills in that country. In fact, seeing that Russian and English interests are not altogether synonymous, it is thought to be hardly the proper thing for an English firm to put down mills in Russia and train Russian workmen, in order that, when political complications prevent the purchase of war material in England, it might be made on the spot.

The Iron Age

AND

Metallurgical Review.

New York, Thursday, August 23, 1883.

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JAMES C. BAYLES, - *Editor.*
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INDEX TO VOL. XXXI.

The index for the half-yearly volume of *The Iron Age*—January to July, 1883—is now ready. A copy will be sent to each subscriber who sends a request for the same. Those who desire the index should apply at once.

The Business Situation.

The reports from the leading iron-trade centers of the country are in the main favorable. In some lines a little weakness is perceptible in special localities, while other branches show increasing strength. At Pittsburgh there is a good demand for pig iron, and consumers are looking rather sharply after lots which have been offered a little under current rates, though prices have been so low that the city furnaces practically control the trade. An improvement in the demand for manufactured iron is also reported from Pittsburgh, and the Western nail factories started up for a month's run on the 13th inst., with a very fair prospect of a good fall trade. The coke trade is brightening under heavier sales, and there is an indisposition to sell for future delivery at present prices. At Philadelphia pig iron seemed to be a trifle heavy last week, but all other kinds of iron were selling quite freely, and sheet and structural iron were in very active request. Reports from Baltimore Cincinnati, Louisville, Chicago and Chattanooga indicated a fair trade in all lines, with pig iron specially firm at Chattanooga, and bar iron in good demand at stiff prices at Louisville. Trade was dull at St. Louis, with no immediate prospect of improvement.

No failures of importance in financial circles have occurred within the past week, and business in Wall street seems to have recovered its normal condition. The recent violent fluctuations in the prices of stocks seem to have been without effect on the iron trade. Of course, if the heavy decline in the prices of the active stocks had caused a very great failure, a panic would have been precipitated which would have been far-reaching in its effects. The banks, however, are exercising unusual caution in accepting paper, and apparently have their houses in order for just such financial crises as that of last week. On the whole, the situation of domestic trade is promising. Prudence in buying and selling is recommended, for the present is no time for reckless ventures, but there is every indication of a continuance of steady trade. It is quite likely that exports of breadstuffs will soon begin on a large scale, and that gold will be imported in payment. This will undoubtedly stimulate business, though perhaps only to a moderate extent. In that case it will be well to watch the European iron market, as prices are now so adjusted that very slight advances here will permit shipments from abroad. According to our latest advices the iron trade is now weak in England, dull in France and Germany, moderately active in Belgium, and very good in Austria, the demand for pig iron in the last-named country being particularly strong.

Duty on Wire Rods.

Among the many knotty questions which are now afflicting the gentlemen who are charged with the responsible task of imposing and collecting duties on imported articles, the proper rate of duty on wire rods seems to be one of the most perplexing. This is especially the case with regard to iron wire rods, although the provisions of the law are not entirely clear in the case of steel wire rods. At the New York Custom House all steel wire rods not lighter than No. 5 wire gauge, and valued at 3½ cents or less per pound, are admitted at the rate of six-tenths of a cent per pound. When these steel wire rods are lighter than No. 5 they are assessed at 45 per cent. ad valorem, as steel "not specially enumerated or provided for." Also, if they are valued at over 3½ cents per pound, they are assessed at 45 per cent. ad valorem as steel "not specially enumerated or provided for." The question is not raised at this port as to whether there is a distinction between steel "wire rods" and steel "rivet, screw, nail and fence wire rods." All are charged with six-tenths of a cent per pound duty, although there seems to be just ground for differences of opinion, as it is claimed that there is such a distinction as that referred to, and that steel "wire rods" should be charged with 45 per cent. duty.

In regard to iron wire rods, however, there is a great deal of trouble, as three rates seem clearly to be in conflict with one another. First, as "iron wire rods" they seem to be only subject to a duty of six-tenths of a cent per pound. Second, as "round iron in coils or rods less than seven-"sixteenths of 1 inch in diameter," the duty is clearly $1\frac{5}{6}$ cents per pound. And, third, as iron "in the manufacture of which charcoal is used as fuel," they are specially subject to a duty of $22 per ton. The rates in conflict have been placed before the Treasury Department for decision, and Judge French, the Acting Secretary, is now in correspondence with parties interested, with the view of getting full information before announcing what rate shall be deemed applicable. He has addressed a letter to Mr. James M. Swank, secretary of the American Iron and Steel Association, Philadelphia, in regard to these duties, in which he says:

"There are two questions before the department in connection with the duty on "round iron The first is as to the rate of "duty on round iron in coils or loops, not "thinner than No. 5 wire gauge, and intended for or adapted to the manufacture "of rivets, screws, nails and fence wire. "Paragraph 180 of the Treasury tariff provides in terms for this class of article, "while paragraph 150 provides in general "terms for round iron in coils or rods at a "much higher rate of duty. It is the impression of the department that all round "iron rods of the size specified in paragraph "80 adapted to the manufacture of rivets, "screws, rails or fence wire, and which the "importer may declare are intended for "such purposes, must be admitted at the "rate of duty specified in said paragraph "180. The second question is whether the "concluding proviso of paragraph 148, regulating the duty on iron in the manufacture of which charcoal is used as fuel, "applies to wire rods, either of the character mentioned in paragraph 150 or 180, or "whether the $22 per ton on charcoal iron "can only be applied to the kind of iron "mentioned in paragraph 145. The department at present is inclined to the latter "view, which would leave wire rods unaffected by the proviso specified. Should "your association desire to present statements on either or both of those topics, it "is requested that they do so at an early "day, as parties are pressing the department for a decision by which they may "regulate their interests."

The British Pig Iron Trade.

Some interesting figures relative to the pig-iron trade of Great Britain are furnished by recent returns of the British Board of Trade. From these it appears that of late there has been a marked falling off in the exports of pig iron, the total shipments for the first five months of the present year amounting to 570,214 tons, against 657,613 tons in 1882, representing a decrease of somewhat over 87,000 tons. At the same time, it is found that the shipments from Cleveland and Scotland during the same period varied but slightly, closer inspection, moreover, revealing the fact that the comparatively better accounts of these two districts were due, not to shipments along the coast, as might be supposed, but entirely to foreign exports. In view of the policy of restriction adopted at these points some time ago, and which, we may incidentally remark, will be closely followed in the immediate future, a detailed statement as to the movements of pig iron for corresponding periods of 1882 and 1883 cannot but be of general interest. The appended table, for which we are indebted to our London contemporary, *Iron*, will be found to give a very good idea of the present situation:

	Tons.	
Exports of pig iron from the United Kingdom during the five months ending May 31, 1882		657,613
Exports of pig iron from the United Kingdom during the five months ending May 31, 1883		570,214
Decrease		87,399
Shipments of pig iron from Cleveland, 1882	368,502	
Shipments of pig iron from Scotland, 1882	249,841	618,343
Shipments of pig iron from Cleveland, 1883	362,700	
Shipments of pig iron from Scotland, 1883	245,511	608,211
Decrease		10,132
Exports of pig iron to France, Germany, Russia, Holland, Belgium, five months, 1882		364,514
Exports of pig iron to France, Germany, Russia, Holland, Belgium, five months, 1883		356,829
Decrease		7,685
Exports of pig iron to United States, five months, 1882		195,446
Exports of pig iron to United States, five months, 1883		109,114
Decrease		86,332

It will be seen from this that the decrease experienced in the exports from Cleveland and Scotland amounted to only 10,132 tons, which, when compared with the total decrease, is almost inappreciable. On the other hand, the statement shows that the falling off in the exports to this country closely corresponds with the diminution in the total quantity exported from Great Britain, and, further, considering the prices realized, it would seem that these exports embraced not only a large proportion of high-class material in both years, but that the average price for the specified period of 1883 was higher than that for last year. The conclusion which our London contemporary would draw from these facts is that the falling off exhibited in the total exports from Great Britain is largely to be attributed to the smaller quantity of hematite iron, spiegel, &c., sent to the United States, but that the decrease in these kinds has not been so great in proportion as the decrease in the inferior qualities of pig iron sent. This is shown by a slight improvement in the average price for the present year.

So far as the present condition in other departments of the statistics of the trade is concerned, it may be of interest to state that, according to present available particulars, stocks of pig iron in Cleveland have shown a slow but steady increase since the latter part of last year, the figure for June 1, 1883, being 287,807 tons, as compared with 266,179 tons on December 31, 1882. As regards Scotland, we must be content with only approximate figures, owing to the fact that the stocks in makers' hands are recorded only at the end of each year. From such information as is now at hand, however, we find that during the first five months of 1883 there was a reduction of only 29,929 tons, which experienced still further reductions in the month of June, stocks having shown an increase in that period. This circumstance greatly favors the assumption of a decrease in local demand, and this, in fact, is actually the case, although not to so great an extent as might at first sight be supposed. Detailed particulars show that the local consumption of pig decreased, in 1883, to the amount of 14,702 tons, in view of which the measures recently taken to continue the policy of restriction seem appropriate, to say the least. Particulars already referred to, moreover, convey a strong suspicion that the restrictive measures were practically ignored in some quarters, since, had this not been the case, it would be somewhat difficult to account for the increased production during the first five months of this year.

American Railway Statistics.

We publish in another column some interesting particulars, taken from advance sheets of "Poor's Railway Manual" for 1883, which will well repay careful perusal by all interested in railway development. A prominent feature brought out by Mr. Poor's compilation is that, so far as mileage is concerned, the rapid growth of our railways within past years has placed the United States upon almost the same level with that of all other countries combined, and that, with the ordinary rate of increase, only a few years will suffice to bring about still more gratifying results. It is barely probable, however, that the exceedingly rapid progress which has been made within the past three years—notably in 1882—will be realized in the immediate future, and already there is evidence of a falling off in the work of construction. As Mr. Poor states it, the construction of railways "seems to proceed in great waves," which were readily apparent in the years 1880, 1881 and 1882, the highest figure having been reached in the last year, when some 11,500 miles of track were laid. The total mileage for the three years was rather more than 28,000 miles, and the fact that the capital necessary to carry on the work was contributed almost wholly by the people of this country may well be cited as a remarkable evidence of material prosperity. A commendable feature characterizing the work of the immediate past and that now under way is found in the fact that not a small proportion of the mileage was and is now being constructed through new territory, opening new fields of labor for the profitable investment of capital, and imparting a stimulus to new and undeveloped industries. There is, in fact, every indication that we have reached a period of reflection in railway enterprise, and that future developments in this direction will be largely, if not wholly, guided by carefully estimating the possibilities of the territory to be entered. The work of constructing parallel lines of railway, moreover, is showing a marked decline, and in view of this a more vigorous growth and healthy feeling may be expected in connection with the existing roads. Opportunity will thus be afforded to reduce their indebtedness, and the enormous increase of liabilities over actual cash outlay which has of late excited a distrust of all railway securities will no longer be a matter of general complaint. That portion of the Manual relating to the amount of freight, number of passengers carried and average cost of transportation per mile will be found highly interesting, showing that the total number of persons transported over one mile in 1882 equaled 6,834,048,765, at a charge of 2.86 cents per passenger mile, and that the total quantity of freight for the same period amounted to 39,302,209,249 tons moved one mile, at an average cost of 1.2 cents per ton per mile. Estimating the value of this tonnage was found a difficult problem, and the result can, under the most favorable circumstances, be accepted as only approximately correct. The total value was thus found to be about $22,011,533,760, but, owing to the fact that duplicate reports were issued by many lines, an appreciable allowance must be made, and the final value, probably much nearer the exact figure, is estimated at not much above $15,000,000,000. In our extract from Mr. Poor's review we have not embraced the original tabulated statement showing by groups the length of lines ironed, share capital, funded debts, floating debts, length of lines operated, gross and net earnings and interest and dividends paid by all the railroad companies of the country for the past three fiscal years, notwithstanding which, however, the matter is still of sufficient interest to claim careful consideration.

The Telegraphers' Strike.

The strike of the telegraph operators collapsed completely on the 17th inst. For several days previously there had been numerous desertions from the ranks of the strikers, and the failure of the movement at length became so plainly apparent to the leaders that they officially advised their remaining followers that the strike was over and they should go to work again—if they could get employment. The contest was quite a long one, having continued over four weeks. It began on the 26th of July. Railroad operators were but slightly interested, the strike principally affecting those who attend to commercial or general business. A very strong attempt was made to induce the railroad operaters to strike, or to refuse to send commercial telegrams, but the effort was abortive. So much dependence had evidently been placed on the co-operation of the railroad telegraphers that as soon as their apathy became known the strike was seen to be hopeless. The issue has been joined, the conflict is over, and now come the reflections. These reflections are as applicable to persons engaged in other occupations as they are to telegraphers. Over four weeks of time have been lost, general business has been seriously interfered with, the striking operators have lost $400,000 in wages, and the telegraph companies have also suffered great pecuniary losses. Not one striking operator has gained any advantage over the company which formerly employed him, while hundreds find themselves very greatly the losers through the unfavorable result of this contest—without situations and without money. Some of them have been telegraph operators so long that it will be very difficult for them to find other employment at bare living wages. The grievances which caused them to strike may have been great. Very low wages for very long hours are not conducive to contentment and buoyancy of spirits. But if there is a plentiful supply of persons anxious to obtain even such employment, it behooves the incumbents either to find no fault with their low pay and long hours or to seek more agreeable positions elsewhere. The ambitious workman who zealously attends to his duties and studiously endeavors to excel does not need to join his strength to that of his less worthy associates in order to coerce his employer into advancing his wages. Such men will obtain the recognition to which their qualifications entitle them. If they cannot get it at one shop they can at another. Individual perfection and advancement are vastly preferable to wholesale concessions extorted by coercive action with other employees.

In this conflict the Knights of Labor have shown their weakness. That great organization, whose ramifications are supposed to extend into every nook and corner of this country, embraces the Brotherhood of Telegraphers. At the beginning of the strike there was much anxiety as to the way in which this mysterious aggregation of trades unions would aid the disaffected telegraphers to vanquish the companies. Brought to the test, this wonderful body, which has been feared in so many quarters, only raised $5000 to relieve the necessities of the people who had voluntarily relinquished their salaries and thrown themselves on the bounty of the great labor deity. But, alas! its feet have proved to be clay, and there is no strength in its hands. It may be more or less troublesome in the future, as it has been in the past, but it will neither be greatly feared on the one hand, nor implicitly trusted on the other.

The Amalgamated Association.

A very long session of the National Convention of the Amalgamated Association of Iron and Steel Workers has recently been held in Philadelphia. Almost two weeks were spent in the transaction of business and in deliberating over the policy to be pursued in the future. The reports of the proceedings which have been published in the daily papers are necessarily meager, but enough has been made public to show that the proceedings have often been very interesting and sometimes very significent. The association, it appears, is not in favor of acting in complete harmony with organizations representing other trades. It prefers to retain its identity rather than to become a mere fragment of a great trade federation. Several reasons are assigned for this action on the part of the Amalgamated Association. One is that the members of the association are protectionists, while the members of many of the other trade organizations are declared to be anti-tariff. This seems to be a very poor excuse for non-federation, because the main pillar of trades unions is the strength thus secured in contests with employers over wages, and the larger an organization is the easier it becomes to support a section of that organization which happens to be on a strike. Another reason—and perhaps the true one—is that the leaders of the Amalgamated Association now occupy a distinctively prominent position in labor matters, which they would lose in case of a coalition with other trades, whose leaders are fully as ambitious as, and perhaps more skillful wire-pullers than, the ironworkers. The country, however, is to be congratulated on this evidence of independence by the Amalgamated Association. It interferes seriously with the success of the great labor union projected by the late Uriah Stephens, and this is in nowise a calamity. If a strike exists among the hatters, it should be settled by those interested, and certainly should not affect brickmakers, leather dressers, shoemakers and ironworkers. In a country with such a diversity of employments as exists here there is always some labor difficulty pending somewhere, and a universal federation of wage-workers would undoubtedly effect infinite harm among perfectly disinterested people.

The collapse of the strike at Bethlehem, which took place on the 14th inst., during the session of the convention, was not calculated to inspire enthusiasm in the breasts of the delegates. That strike was inaugurated at the instance of the Amalgamated Association, and of course aid was expected from the organization. But an experience of six weeks proved to the Bethlehem ironworkers the hollowness of the extravagant pretensions of the association. They saw the Bethlehem Iron Co. gradually supply their places and start its works with non-union men, and their applications for assistance were met with little favor and poor success by those whose dupes they were. The Bethlehem branch of the association no longer exists: its late adherents now vehemently denounce it, and it will undoubtedly be a long time before the treasury of the association receives contributions or dues from Bethlehem.

The association, it is stated, will hereafter hold its annual convention in Pittsburgh, where the general office is located, and where the interests of the organization are most at stake. The membership of the association is being gradually limited to the vicinity of Pittsburgh. One by one its outposts have fallen, and conflicts in isolated localities have been decided in favor of employers. The past year has been full of disaster in numerous places, and the future is not bright with the promise of harmony in the stronghold in which organized labor has most firmly intrenched itself.

The last hours of the convention, which closed on the 16th inst., were devoted to the election of officers and the repudiation of debts on account of recent strikes. Mr. William Weihe, of Pittsburgh, a Democratic member of the Pennsylvania Legislature, was elected president to succeed Mr. John Jarrett, who declined re-election, and Mr. William Martin was re-elected secretary. The repudiation of debts due on account of strikes may have been absolutely necessary, but it will undoubtedly tend to lessen the influence of the association among workingmen. It is a very decided indication of weakness and of bad faith. The association has heretofore been regarded with dissatisfaction and disapproval by employers; it will now be regarded with disgust by duped and betrayed workingmen.

The Sheffield correspondent of the London *Iron and Coal Trades Review* for August 3 says: "In the crucible-steel trade an in-"crease of business is reported. Home "markets are taking good supplies, and "America is a fair customer, notwithstand-"ing the altered tariff."

Liverpool advices state that steel stamping plates have displaced the charcoal tins almost entirely, but the steel-plate rollers complain that the prices are too low. Tinners offer less for steel than for charcoal plates, notwithstanding the former are more regular in quality.

Relations with Turkey.

The Turkish Government gives notice that the existing commercial treaty with the United States expires March 13, 1884, but General Wallace, the American Minister to Constantinople, demands that it shall be prolonged. The tariff which accompanies the treaty is also obnoxious to the Porte, which proposes in lieu of it a tariff of 15 per cent. on articles imported for consumption, and a tariff of from 8 to 20 per cent. on other importations, but, on account of the opposition encountered, it consents to a revision of the tariff now in force. One might judge, from the frequency of dispatches from Constantinople, that our commercial relations with Turkey were of the greatest importance, whereas, so far as our exports are concerned, it is little more than a market for petroleum, and a question that has arisen respecting the storage of this product at Smyrna is the chief cause of the supposed strained condition of diplomatic relations. The latest statistics from the State Department at Washington show the volume of our trade with Turkey, in comparison with other nations, to be as follows:

	Imports from Turkey in Europe.	Exports to Turkey in Europe.	Total trade.
France	$28,352,000	$15,446,000	$43,798,000
Russia	9,348,000	8,067,000	17,415,000
England	7,597,000	20,998,000	28,595,000
Italy	6,414,000	2,836,000	9,250,000
Roumania	1,704,000	4,618,000	6,322,000
United States	283,000	619,000	902,000
All other countries	5,000,000	8,000,000	13,000,000
Total	$58,698,000	$60,804,000	$119,302,000

According to the same authority, the larger part of the direct imports from Turkey during the year 1881 consisted of chemicals, drugs and dyes, which entered free of duty. France sends out immense quantities of fancy goods suited to the Eastern market, and England exports heavily of cotton and woolen manufactures, hardware and cutlery, arms, &c.

The Position of Lead.

Since our editorial on the position of the lead market early in June, the most active season for the sale of this metal has arrived, and prospects, as regards the demand and prices, are canvassed with special interest. Notwithstanding the depressed period through which we have passed, the consumption has been fair, except that of white lead, stocks of which have of late been accumulating on this coast, where corroders have for some time past experienced the severe competition of Western concerns. The consumption of lead for corroding purposes in this country usually varies between 50,000 and 60,000 tons of 2240 pounds each, and a temporary falling off in the demand invariably exerts a depressing influence on the market for soft lead. In fact, in dull periods we have known it to be sold at as low, if not lower, prices than hard lead. If the demand for the latter during the present year had been less steady, the price commanded could not have been maintained, in view of an estimated output during the first six months of over 60,000 tons of hard and soft lead. The result must to a certain extent be attributed to speculation, though perhaps not to so great a degree as usual. During the past month or two the Western States have been tolerably successful in effecting sales of common lead on this coast, and it is even asserted that these sales, made to arrive in the latter part of the year, have been considerably larger than usual, and that consumers here are, for the greater part, amply supplied for the fall. Interest now centers on the latter, and the next few weeks will probably indicate whether or not activity is to be experienced.

The course of prices in this country has during the present year been steadily, though slowly, downward; in Europe the decline has been even more marked, and prices reached the lowest level ever attained. This may even restrict Spanish production unless a speedy recovery is experienced. The fact is that Spain has of late shipped more pig lead abroad than ever before, shipments for the first five months of 1883 amounting to 51,068 tons, against 47,442 tons, and 42,897 tons for the corresponding periods of 1882 and 1881, respectively. Proceeding at this rate the output for the whole year would be about 120,000 tons, unless some unlooked-for check should be experienced, as is now threatened. The export of pig lead from Spain has increased as under:

	Tons.		Tons.		Tons.
1865.....	48,314	1873.....	70,981	1878.....	88,068
1869.....	73,773	1874.....	84,384	1879.....	106,830
1870.....	76,867	1875.....	91,738	1880.....	92,399
1871.....	92,434	1876.....	98,805	1881.....	110,420
1872.....	94,705	1877.....	110,051	1882.....	116,132
Total..	383,993	Total..	455,959	Total..	513,849

In other words, from an average of 76,717 in 1868–72, it rose to 102,768 tons average the last five years—an increase of about 33 per cent. in ten years. With a very large output here and in Europe, and business only moderately active on both sides, the lead market is evidently in anything but a flattering position.

Very important movements often originate in apparently obscure and out-of-the-way places. For several weeks the business of the large cities and great centers of trade has been seriously interfered with by the telegraphers' strike. Messages have not been sent in time or not received in time, or not sent or received at all, or have been delivered in such unintelligible shape that it would have been better if they had not been sent or received. The vials of wrath have been poured out alike on the heads of the managers of the telegraph companies and the striking operators. Threats of appeals to Congress for the establishment of Governmental supervision over the telegraph lines have been very numerous in the large cities, and new telegraph lines have been projected, the operators on which, we presume, will be warranted never to strike and never to make a mistake. But as yet we have heard of no action being taken by any representative body in New York or elsewhere in the great centers of trade in favor of a telegraph system in connection with the post-offices. That proud distinction belongs to Virginia, and to Augusta County in Virginia, the county seat of which is Staunton. The Mahone coalitionists of that county have met, have found out that there is some trouble in telegraphic matters, and have boldly passed a resolution urging the establishment of a postal telegraph. That which men of business have hesitated to recommend, these men of politics do not fear to urge. It will make a stirring campaign in Virginia this fall, the question will be such a vital one there.

English ironmasters co-operate with one another in subduing strikes. The London *Iron Trade Exchange* for August 4 states that a meeting of South Staffordshire ironmasters had been held at Birmingham a day or two previously, at which "it was unanimously agreed that the works in operation should form a fund to indemnify the owners of works still idle." One pound per puddling furnace per week will be contributed, and it is supposed that this will allow each idle mill owner £5 per furnace per week.

Returns which are now at hand of British blast furnaces active and idle throughout the kingdom on the 1st of July show that out of 912 furnaces built only 544 were in blast and 367 out of blast. At about the same period of last year 563 were in operation and 363 were idle, showing that the present working total is thus less by 18 furnaces than at the corresponding period of last year.

SCIENTIFIC AND TECHNICAL.

Hardening Soft Limestones.

According to *Engineering*, alkaline silicates are occasionally employed to give certain limestones a greater hardness. When the limestone is saturated with a solution of these salts it quickly becomes covered with a more or less perfectly impervious glazing, but it is difficult to secure the correct proportions, and soluable salts and water may be left within the stone, the latter causing slow disintegration from subsequent freezing and from other causes. To obviate these disadvantages, M. L. Kessler proposed, in a paper recently presented to the Academy of Sciences of France, to use the fluor-silicates of magnesium, aluminum, zinc and lead, instead of the alkalines used in the former processes. In this case only insoluble salts would be formed throughout the stone, and a more homogeneous material would be obtained. If great hardness is not aimed at, but only a granular, marble-like surface, it will be sufficient to make a paste of water and the powder of the limestone, to let this dry on the stone, and then to apply the silicate. By mixing this with silicates of copper, iron, chromium, &c., the various colors of marbles may be imitated, and the color would, as in the natural rock, be uniform through the whole stone. The materials are not more expensive than those of the older processes.

Discoloration of Brick Walls.

Within late years the great popularity of brick as a building material and the great increase in the number of brick edifices which have been erected, have brought into prominence a matter which could not have escaped the notice of the most casual observer, namely, the disfigurement of brick walls from a coating of white powder resembling in appearance hoar frost or mildew. These deposits are usually formed in rainy weather, and for a long time it has been a mooted question how this substance comes to be collected, what it is, and what can be done to remove it or prevent its formation. The rains of this spring seem to have been especially favorable to the forming of these deposits, and old buildings even, which hitherto have never been defaced by this substance, have this year given up their ruddy appearance for a paler and less attractive complexion. In speaking of this subject, it has been remarked that the efflorescence is simply ordinary Epsom salts or sulphate of magnesia. The sulphurous acid which results from the burning of coal combines in the presence of moisture with the magnesia in the mortar or from the clay in the bricks. It was decided that it emanated from the former source. The sulphate of magnesia dissolves in the water, which runs over the bricks, and, evaporating, leaves the deposit. Some walls are covered with a black substance which seems at a distance to be smoke. This is a fungus, which flourishes in damp places, and is materially different from the white sulphate.

Testing Timber.

Besides straight and close grain, freedom from sap, shakes and loose knots, says an exchange, good timber, such as the best deals, should have a uniform color throughout. Appearances of timber may mislead if they are not in accordance with well-understood characteristics of soundness. In the same species of timber the strongest and most desirable specimens will be marked by narrow regular annual rings, indicating slow growth and close texture. The cellular tissue, as seen in the medullary rays, should also be firm and compact. Uniformity of substance is one of the chief characteristics of good timber; dead knots, flaws and shakes are, of course, prejudicial, and affect the strength. In sawn timber the architect should see that the surface is not woolly, and that it does not clog the teeth of the saw. A bright silky luster ought to be apparent when planed, while "a dull, chalky appearance," says one authority, "is a sign of bad timber." When the annual rings are porous, the wood is weak. It has been remarked that good timber is sonorous when struck, while a dull, heavy sound betokens decay. "Star-shakes" "cup-shakes," or splits in the direction of the rays and rings, are to be avoided, especially heart-shakes, which prevent large scantlings being cut. Good deals have a uniform color, and a darkness of tone is a sign of strength and durability. In best pine timber the annual rings are hard, of a dark red color, but these vary in tint; the rings ought not to exceed one-tenth inch. Oak, if of the best kind, should have "a pale brownish-yellow color, with a perceptible shade of green, a firm and glossy surface, and hard and compact medullary rays." Another authority observes: "Bright-looking timber is better in quality than dull, and that which is smooth in the working better than the rough or woolly-surfaced." "The heart of trees having the most sap-wood is generally stronger and better in quality than the heart of trees of the same species that have little sap-wood." No doubt the microscope affords a better test of good timber than the unaided eye. The use of the microscope in testing timber was noticed in a paper read at the Franklin Institute, Philadelphia, in which the author showed that timber condemned by that instrument cannot be mistaken, and after once seeing and comparing samples of good and bad wood, it is easy to recognize the difference with a pocket magnifying glass. The micro-photographs of timber of different sorts have shown that in the strong kinds the concentric layers are close in texture and narrow in width, and the radial plates numerous, wide, long and stout, while in poor wood the opposite characteristics prevail. With such sections of timber of known strength it would be easy to discard samples which did not exhibit the same number of rings or radial plates per inch of section.

The Upper Limit of Human Audition.

This subject has recently been studied by M. E. Panchon, and his results have been communicated to the French Academy of Sciences. The notes were produced by a powerful syren of the kind invented by Cagniard-Latour, and actuated by steam. The highest audible notes produced in this way had 72,000 vibrations per minute. M. Panchon has also vibrated metal stems fixed at one end, and rubbed with cloth powdered with colophane. In diminishing the length of the stem the sharpness of the note is increased. Curiously enough, he finds that the length of stem giving the limiting sound is independent of its diameter; and for steel, copper and silver the lengths are in ratio to the respective velocities of sound in these metals—that is to say, as 1000 for copper, 1002 for steel and .995 for silver. Colophane appears to be the best rubbing substance. When the acute sound ceases to be heard, the sensitive flame of a gas jet is still affected by it. While upon this subject, we may mention that Mr. Francis Galton has recently invented a "hydrogen whistle," which enables him to obtain notes far above the upper limit of human hearing, his object being to test the hearing powers of insects, which, as is well known, have very acute ears. The number of vibrations produced by a gas in a whistle is universally proportional to the density of the gas, and, as hydrogen is 13 times lighter than air, the sounds produced by it in a given whistle are 13 times shriller—that is to say, the pitch is 13 times higher. Mr. Galton has made a whistle .14 inch long and .04 inch in diameter, which, with hydrogen gas, gives a sound of 312,000 vibrations per second. The whistle is fitted with a piston at its base to regulate its length, and it is probable that still higher notes can be obtained with a shorter length.

The Amalgamated Association of Iron and Steel Workers.

The convention of the Amalgamated Association of Iron and Steel Workers on Thursday last elected the following officers for the ensuing year: President, William Weihe, Pittsburgh; secretary, William Martin, Pittsburgh; treasurer, James Penny, Pittsburgh; vice-presidents, first district, first division, P. F. Keeney, Pittsburgh; second division, John J. Morgan, Youngstown, Ohio; second district, C. D. Thompson, Wheeling; sixth district, Evan H. Davis, Cleveland; eighth district, Andrew Lee, Philadelphia. The third, fourth, fifth and seventh districts are to be filled by appointments by the incoming president. The trustees chosen were: Samuel Weighoneight, Pittsburgh, John J. Davis, Sharon, Pa., and W. Newton Linch, of Wheeling. Davis is chosen to succeed Trustee Weihe.

John J. Davis, of Sharon, Pa., on behalf of a committee appointed to convey a testimonial of regard to President Jarrett, the retiring official, presented a solid silver tea service to Mr. and Mrs. Jarrett. Assurances were given that had President Jarrett desired a re-election it would have been tendered unanimously. Mr. Jarrett said in part: "As a labor leader I have recognized that the principles that should guide me are those that sacrifice personal labors for the good of our fellow man. I have the pleasure to say that I am going out of office with a warm heart for my brethren. I have realized the help and encouragement we have received from the press all over the country. I had expected you would give me some vote of your confidence, but I did not look for a testimonial like this."

The convention then resolved itself into secret session for a quarter of an hour, after which it adjourned with three rousing cheers from the delegates. The next annual convention will be held in Pittsburgh. Among the business transacted was the repudiation of all debts against the association on account of strikes in past years. It was also decided that the nailer's scale shall be signed June 1 annually. A law was passed requiring nailers to teach 3 per cent. annually of the nail-feeders employed in nail mills hereafter, provided the feeders are of the required age and are members of the Amalgamated Association, in good standing. William Weihe, the newly-elected president, who is a Democratic member of the Pennsylvania State Assembly, says he heartily approves the principles of the association regarding a tariff for protection, and announces that he will endeavor to pursue the same policy in the future, in regard to administering the affairs of the association, as adhered to by Mr. Jarrett in the four years of his incumbency.

Technical Education.

The general increase in schools of design, technical schools and like institutions, says A. Curtis Bond in a recent issue of the *Popular Science Monthly*, has created no little comment, and given rise, to some extent, to opposition. It is a difficult matter to reconcile the differences between the opponents and those who favor this form of instruction, for the reason that the question, in a measure, is one of pecuniary interest to both parties. There are many instances in which technical education may justly be claimed to be a necessity, especially in those professions which demand a knowledge or a character of schooling that can be more thoroughly conveyed by means of that which instructs in the theories of a craft or art as distinct from its practice. In the case of the architect, for example, nature may indicate the urgencies of the profession; it provides for the beautiful, for the attractive features, but the details it avoids; teachers must show the mechanical portions of the work, and instruct in the principles which make the building possible and form a support for the decorative exterior. The necessity of such teachings was recognized by early nations, and in their architecture and designing its value was taken into consideration, and its spirit must have existed among the early Argans, as its materialized form did with the skilled and finished draftsmen of Egypt and Greece.

We may easily realize the increased need of technical training to-day over the necessity of two thousand years ago. At that time the artist himself did the work—the actual labor; he evolved the idea and executed it, the brain that conceived the thought guided the hand that gave that thought substance and shape. Every touch of the chisel imparted life, for the spirit of the worker went into the stone, and it was molded and shaped by the genius of the thinker. Now it is mechanical; the artist originates, others execute, and this execution must follow patterns, designs, plans. No scope is given the workman; he is bound by lines beyond which he dare not go, and his fancy, if he has any, serves naught in the creation of his subject; drawings control this creation, and the living translator of those drawings, from what was in the past an intelligent reasoner, has become in the present an automatic machine. Disposing thus of a man's individuality, some means are essential to convey the thought of the designer into the hand of the worker, and customs have grown and laws have been adopted that will serve as a sort of mental telegraph between these two—laws which govern the flight of the artist's fancy and instruct the artisan in an understanding of the designer's purposes. Taking this view of the situation, it is certainly necessary that talent should be technically tempered.

It is not to be expected that every one learning a trade will become an expert or an innovator; ability to comprehend the requirements of trades is developed in either the shop or the school, but the regrets so often expressed by those who have grown up from apprentices for their lack of education evinces the limited possibilities of practical knowledge simply, and demonstrates, in a measure, the necessity for an early instruction in the theories, if one thinks to introduce improvements and progressions in his profession. The want of education, with which most apprentices must contend, interferes in other ways with their progress. The master is apt, in many instances, to exaggerate the difficulties to be overcome, and enlarge upon the mysteries surrounding his work-bench. The doubt this would arouse in an unschooled mind might be fatal to success, and the superstition that there was something impossible for the apprentice to comprehend is liable to remain with him as a drag-net to his future usefulness, trammel his ambition, and perhaps turn his abilities into a channel less profitable to himself and to the world.

Technical schools, adopting, as they do, a different course, impress the students with the comparative simplicity of business, and give them the feeling of ability to grasp and utilize the intricacies and peculiarities of the trades. That which is formidable to the uninstructed becomes a *bagatelle* to those familiar with the details and with those who have an intelligent theoretical acquaintance with the governing principles. It is true, this theoretical knowledge cannot provide for all emergencies that are likely to occur in the workshops, but it lays a foundation which will aid the student, when those emergencies present themselves, in comprehending and overcoming the difficulty; and it is a question we would be loath to decide in the negative, whether or not a mechanic, who, after being educated in a technical school, had had a reasonable experience in a shop, would not find a readier and more effective remedy for an accident than one who had been brought up in a shop and lacked school training.

Another consideration worth noting is the comparatively short time during which a man improves his skill in the trade or art he may have adopted. The Technical Commission of Great Britain sets the period at from 10 to 15 years as a maximum, and this may be regarded as a reasonable estimate for the time at the end of which progress in the individual ceases; and, such being the case, it is proper to give at the outset all the helps toward developing talent that are attainable. Technical education may be one of these helps. If it were possible to acquire theory and practice at one and the same time, its desirability would be indisputable, but we imagine this in its true sense is impracticable. The practice obtained in technical schools is not the real, genuine, unadulterated article, and it would be a dishonest teacher who would put forth any such claim. It is impossible to foresee, as we have said, all the necessities that arise, and are likely to arise, in the course of business experience, and they absolutely require, when they obtrude upon the regular course, the judgment of a mind that has been accustomed to coping with difficult situations where a failure to devise a remedy at once meant an utter failure of the entire work.

But one of these qualifications must, in the order of things, precede the other, and we are confronted with the question, Which shall it be? Theory—that is, the comprehension and understanding of whatsoever we undertake—is the foundation upon which practice may build; theory will necessarily acquire the mechanical ability to put its ideas into shape by a reasonable amount of practice; but practice, though it be of years, does not by any means guarantee theoretical, or even an intellectual, appreciation of the results that labor accomplishes, and without this what can be expected from the mechanic? We certainly should not ask for improvements from a man who does not understand the foundation principles of the mechanical part of his work. Starting with a fairly good technical or theoretical education, one grapples with the problems of business more intelligently and, in most cases, more successfully. If one chance to become an employer, he can utilize the practice of his employees to demonstrate his theories, and often will this theorizing, and the thoughts created by an early technical education, suggest means for lightening, simplifying and improving the labor that practice had failed to find an opportunity of modifying.

Irregular Expansion Curves in Indicator Diagrams.

When applying the indicator in actual practice, it will be found that the expansion curves vary greatly in different cases, the variety of figures depending upon the communication of heat to and from the steam and a number of other causes, the more important of which affecting the power of the engine are thus enumerated by Rankine: Wire-drawing at the point of cut-off; clearance, compression or cushioning; release; conduction of heat, and liquid water in the cylinder. Undulations, the friction of the indicator, and the position of the indicator affect only the figure of the diagram. Wire-drawing arises from the fact that the cut-off valve does not close instantaneously, but gradually, and the loss of pressure by the steam in passing into the cylinder, therefore, also gradually increases. Instead of a perfectly straight line, therefore, the steam line at the top of the diagram is a drooping curve. Leaking valves were long credited with the phenomenon of incorrect expansion, a subsequent explanation being that the water in the steam resulting from condensation and other causes evaporated during the last part of the stroke when the pressure was partly removed, and the resulting steam prevented the pressure from falling as low during expansion as it should have done. This theory has held its ground for a long time, and while the fact of condensation and re-evaporation, especially at low rotative speeds and with large cylinders and early points of cut-off, cannot be ignored, it has been shown that valve leakage is, after all, an important factor. To the credit of our engine builders, however, be it said that the inaccuracies arising from this particular cause are being eliminated to a great extent, due to the skill and extreme care which is brought into play in the fitting of valves.

The term "clearance" should be understood to include not only the clearance proper—that is, the space between the piston and the end of the cylinder to which it is nearest at the end or beginning of a stroke—but also the volume of the ports, and generally the whole minimum space between the piston and the valves. This space, as well as that passed through by the piston, must, of course, be filled with steam. Analysis shows that the clearance affects the ratio of expansion, and consequently the point of cut-off, since there is a real and an apparent volume of steam in the cylinder of the engine at the instant of cut-off. The expenditure of steam, and consequently of heat, moreover, is naturally increased by reason of the clearance.

Compression, or cushioning, is effected by closing the exhaust-valves before the end of the return stroke, thus confining a certain quantity of steam in the cylinder, which is compressed during the remainder of the return stroke. Release means opening the exhaust port for the escape of steam before the forward stroke is finished, in order to diminish the back-pressure. In an engine in which there is no release, the exhaust port opening exactly at the end of the forward stroke, the back-pressure line is usually a curve, showing a gradual diminution of pressure during the return stroke. By making the exhaust occur early enough, the entire fall of pressure may be made to take place toward the end of the forward stroke, so as to make the back-pressure line approximately straight. Conduction of heat to and from the cylinder walls, or to and from the liquid water contained in the cylinder, has the effect of reducing the pressure at the beginning and of raising it at the end of the stroke, as already mentioned above. So far as undulations in the diagram are concerned, it should be stated that they are caused by the inertia of the indicator piston and the elasticity of the spring. In order to diminish their extent, the spring of the indicator should be stiff and its mechanism light. When the undulations are large, it is extremely difficult to determine the mean effective pressure from the diagram, and in attempting to find it by sketching a diagram free from undulations, it is more accurate to draw a line midway between the crests and hollows of the waves, than to draw a line inclosing the same area with the wavy line.

The friction of the indicator, by directly opposing the motion of its piston and pencil, tends to make the indicated forward pressure less and the indicated back pressure greater than the real forward and back

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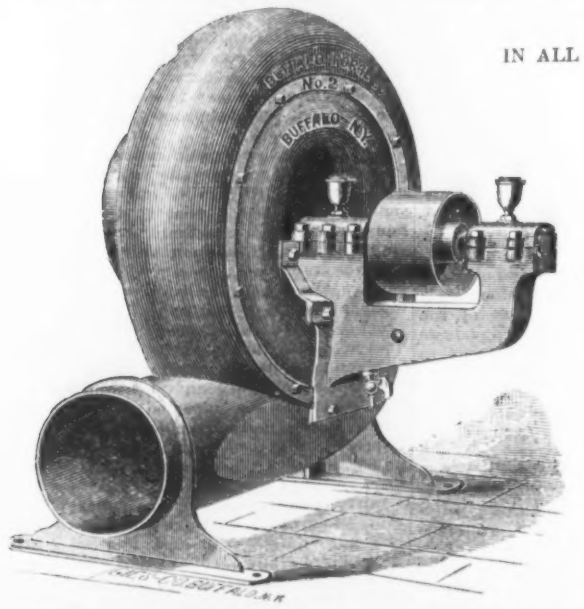

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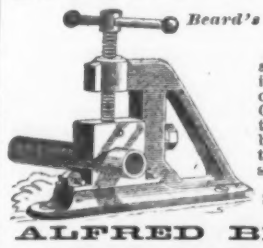

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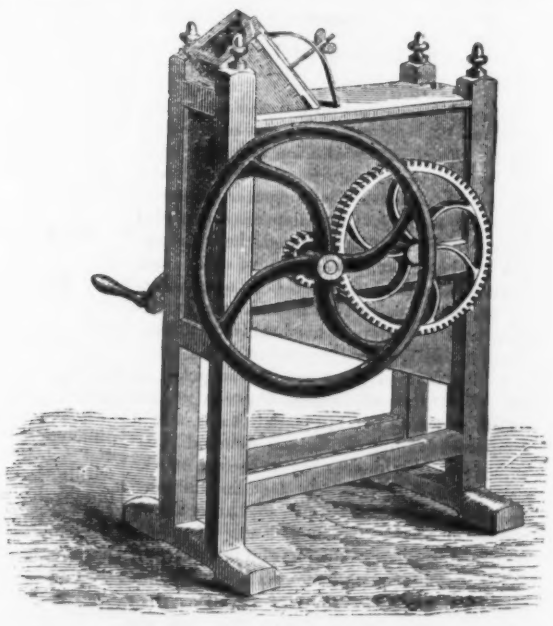

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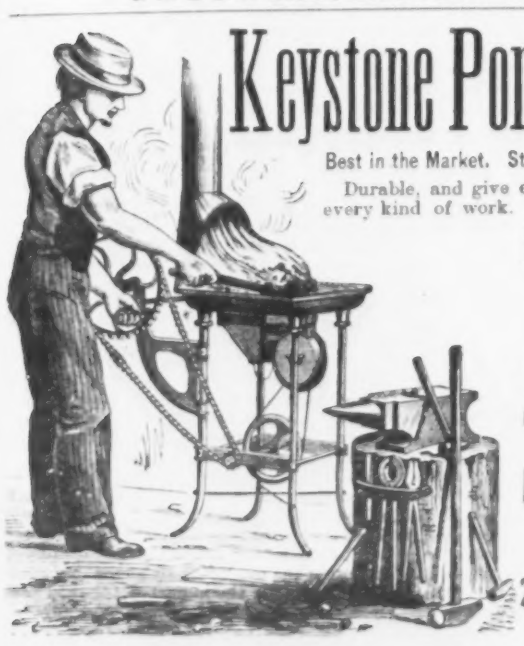

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pressure respectively, and so to make the indicated energy less than the real energy exerted by the steam on the piston, but to what extent is very uncertain. According to experiments, the diminution of the indicated energy by the friction of the indicator agrees nearly with the work performed in overcoming the friction of the engine. The indicator therefore shows, not the whole energy exerted by the steam on the piston, but very nearly the useful work of the engine. But it is doubtful how far this principle is generally applicable. Referring to the effect of the position of the indicator, it may be here stated that experiments have proved what might have been expected from the laws of fluid motion—that when a rapid current of steam blows across the orifice of the nozzle of an indicator, the indicated pressure is less than the real pressure. Every indicator, therefore, should be fixed, if possible, in a position where it is not exposed to this cause of error.

The Industries of St. Louis.

A letter in *Bradstreet's* from a St. Louis correspondent gives some very interesting particulars as to the industries of that city, from which we extract the following:

According to the special census of manufactures in 1880, St. Louis had 2924 industrial establishments, representing an aggregate capital of $50,832,885, and employing 33,980 male hands above 16 years of age, 4761 females above 15 years, and 3084 children and youths. To these hands were paid wages aggregating $17,743,532 for transforming $75,379,867 worth of materials into $114,333,375 worth of marketable products during the year for which the enumeration was made. Flour and grist milling was then, and continues to be, the greatest of St. Louis industries, measured merely by value of products, which amounted to $13,783,178. The laborers in this industry averaged an output for the year of $20,634 worth of product to each one. This was a far heavier proportion than existed in any other prominent line of industry. But this does not signify very much, though the figures look so imposing, for less than $\frac{1}{8}$ of that amount represents the productive value of each man's labor for the year, the remaining $\frac{7}{8}$ and over of final value having previously existed in the material used—the grain ground. Nevertheless, for producing that much new value the mill hands were paid an average of $731 each for his year's work. In considering this rate of pay, allowance must be made for the fact that child-labor is not employed in St. Louis flour mills to such an extent as to be noticed in the census enumeration. Our flour-mill hands average considerably higher wages than is paid here in any other prominent industry. Is this the reason that a strike of consequence was never heard of among flour-mill men in this section? Not necessarily, for in this part of the country there are more mills than post offices, and a general strike among them would be almost impossible to manage. It is a point worth noting that the flour-mill workers here have always (even when their mills were closed down) held themselves aloof from labor difficulties.

It is not easy to say which of the industries herein named has the most local value and is worth the most to St. Louis as a city. The flour interest can scarcely be deemed ahead of all others in this respect. It employs only hundreds of workers where other lines support thousands. Yet, taking the sum of wages paid and materials used from the total value of products, the owners of our 24 mills in 1880 had $1,262,935 surplus with which to meet "wear and tear" on their plants, valued in the aggregate at $2,067,500. In point of profit to owners the milling business would seem to be a notable industry in St. Louis. As to probable profits to owners, however, the meat-packing interest rather outranks flour-milling. In this line the difference between the value of live meat for slaughtering, added to wages paid, and the value of total products, is represented by $1,068,392, which the owners have for one year's wear and tear upon 62 establishments valued at $1,243,000. Their total product that year was worth $8,424,064, but nearly seven-eighths of this value previously existed in the live stock used, so that the $14,936 worth, or more, which each of the 564 employees contributed, on an average, to the total product, did not really amount to a great deal in new value. However, the laborers in this industry averaged only $478 apiece for the year's work.

The city numbers 62 foundry and machine-shop establishments which were listed in the census. It must be conceded that of the more massive industries in St. Louis this one is of eminent importance. It supports more people than any other. There are 3433 males above 16 years of age to whom it is credited with giving employment. The average value of the product of each one's labor for the year was only $1733. But almost one-half of this was new value, evolved by accurate, though rough hands, guided by disciplined, though restless intelligence, from $2,700,844 worth of raw material, making an aggregate of $5,952,770 worth of marketable products. After paying for labor and material, the owners of these establishments had left $1,397,880 for fuel, &c., and wear and tear on their plants, the aggregate value of which was $3,055,713. Iron and steel production, however, left owners that year with very slight encouragement. The cost of labor and materials reduced them to a balance for other accounts of only $510,897, though they had $5,960,600 capital invested in 10 establishments, which turned out $3,950,530 worth of products. The 2158 laborers employed also fared poorly, for their average wages were only about $200 each, notwithstanding each averaged $1367 worth of products, nearly one-third of which was new value.

The brewers averaged an income of $516. In products they averaged $3687 worth of malt liquor, nearly half of which was new value. The proprietors of the 23 establishments also apparently did passably well. The cost of labor and materials left them for sundries and profit $1,335,578 on an investment of $4,184,600. Of beer, &c., they prepared for market $4,535,630 worth. Printing and publishing embraced 101 establishments, employing 2153 hands, exclusive of children and including 175 females. Their incomes averaged $570, and not quite one-third of what they produced consisted of new value—"such as it was." The owners had an income of $1,179,804 over and above the cost of labor and material, from an aggregate investment of $2,480,060.

This is a record of a few of the leading industries in St. Louis during a year which was not generally a discouraging one, nor one marked with extraordinary prosperity. These industries are waxing greater and showing more steady thrift than for many years heretofore. They are supplemented by a multitude of lesser interests in the productive line, most of which are in excellent condition, and many of which are developing commanding proportions.

Importation of European Cement.

According to a recent decision of the Secretary of the Treasury, the foreign cement used in the construction of the pedestal for the Bartholdi statue is to be admitted free of duty. The rate under the new tariff is 20 per cent. ad valorem, and it is calculated that the remission of duty will save about $5000 in the cost of erecting the pedestal. The decision of the Secretary is based on the fact that the Government has recognized the Bartholdi statue as a national gift from France to this country, and that the statue is to be used as a beacon. In this connection a few words upon the importance of cement at this port may not be amiss. During the year 1878 the importation of all kinds of cement at the port of New York was 70,517 barrels; in 1879 the amount went up to 106,046 barrels; in 1880, to 165,913 barrels; in 1881, to 222,672 barrels, and in 1882, to 362,126 barrels; while for 1883 the amount to date since January 1 is about equal to that received during the corresponding period last year. It will thus be seen that the increase of importation during the past few years has been very rapid, and places cement as an important item in the list of foreign merchandise. Some few fancy grades are received for terra-cotta work and other special purposes, but the bulk is known as "Portland," and is used in all sorts of building operations, with a peculiar adaptability for heavy foundations, patent paving blocks, cellar and cistern bottoms and submarine work.

Although an "American Portland" is made comparing very favorably with the imported stock, and by many architects considered quite as good, the foreign article has unquestionably found preference over the average domestic product where certain "setting" qualities were a desideratum, and up to a certain point the importation was a profitable one. Like many other "good things," however, the business has for some time been overdone, and the earlier success of the movement is now proving its bane. Supplies at first were drawn almost entirely from England, but subsequently the Continental manufacturers took the cue and last year furnished the largest proportion of the supply, with every indication that they will hold their own this season. In fact, nearly all the leading quarries of Europe have been engaged in an effort to obtain a portion of the American trade, until they have succeeded in forcing the price down from about $3.50 to $3.75 per barrel to $2.50 to $2.65 per barrel, without opening a neutralizing demand, and a large accumulation is said to be on hand, with no immediate prospect of sale. It is more than likely, however, that quality has been quite as important a factor in depressing the market as quantity. Not only has a great deal of poor stuff been sent in here, under the apparent impression that anything under the brand of Portland would satisfy our trade, but many manufacturers, with excellent material to work from, have, in the haste to effect shipments, sent out a grade materially below their initiatory consignments, and thus impaired the standing of their product. Buyers have, in consequence, become suspicious and careful, and naturally incline to give their preference to such brands as importers have been enabled to offer without deterioration from original high standard of quality. Hopes are entertained that the costly lesson will result in removing most existing evils and eventually bring the business around into healthy condition again. The introduction of the foreign article does not appear to have had any serious influence upon the home product, the latter commanding a good average price and finding an outlet to the full capacity of the mills until within a month or two, when the slower condition of the building trade, local and interior, led to some falling off in trade.

Referring to the condition of the trade in Australia, the *British Trade Journal* remarks: "Trade reports from the Colonies speak of business as being very much 'cut up.' The wholesale ironmongers, iron merchants and dealers in fancy goods have been materially and adversely affected by the accession of numerous traders from the Continent of Europe and the manufacturing districts of England and the United States. This, as the result of the exhibitions of 1880-82, was to be expected, but it was scarcely anticipated that imports would be so large as to glut the markets and cut profits down to the vanishing point. One result has been to get rid of the middlemen very largely, but exporters in England should bear in mind that Australia cannot absorb their manufactures just as a sponge sucks up water. A decline in imports would be particularly welcome, especially at Sydney, where a mild financial crisis appeared imminent very recently."

Plans and specifications have been prepared for a new steamer for the use of the Fish Commission, and several bids for her construction have already been received. The vessel will be 102 feet long and 16 feet wide. She will be modeled like the present Fish Commission steamer Lookout, but will have her decks flush, the only structure on deck being the pilot-house. The vessel will be built in complete style and is intended for ocean service. The hull will cost from $12,000 to $15,000. It was thought that the boilers of the Lookout would be available for the new steamer, but it has been decided to put in new machinery.

Improvement of the Mississippi.

Capt. W. H. Heuer, Corps of Engineers has submitted to General Wright his annual report of the progress of the work on the improvement of the South Pass of the Mississippi River, from which the following extracts have been taken:

Except for five days in July, 1882, there has been a channel between the jetties having at least a depth of 30 feet of water in it, and the 26-foot deep channel in the jetties had during the year, except for nine days in July, 1882, a least width of 200 feet. At present there is a 31-foot depth of channel in the jetties, and the least width of the 30-foot channel is 90 feet. The least width of the 26-foot channel is 240 feet In the pass itself there is a channel 20 feet deep, and the 26 foot channel in the pass has a least width of 160 feet. In other words, there is now a channel at least 160 feet wide and having a least depth of 26 feet of water in it from the Gulf into the main river. This is the best channel that has ever been found since the jetties were constructed. But 18 days' dredging has been done on the work during the year, of which five days was in the pass, nine days in the jetties and four days on the mud lump outside of the jetties. The 30-foot channel within the jetties has much improved during the year. For a small portion of the year the narrowest part of this channel is only 15 feet in width. This has increased until now its least width anywhere is 90 feet. The improvement is attributed to the construction of an inner jetty built parallel to and about 200 feet inside of the east jetty. The length of this inner jetty is 6810 feet. While the inner jetty has improved the channel in the jetties, it has reduced the width of the waterway between the jetties to 630 feet.

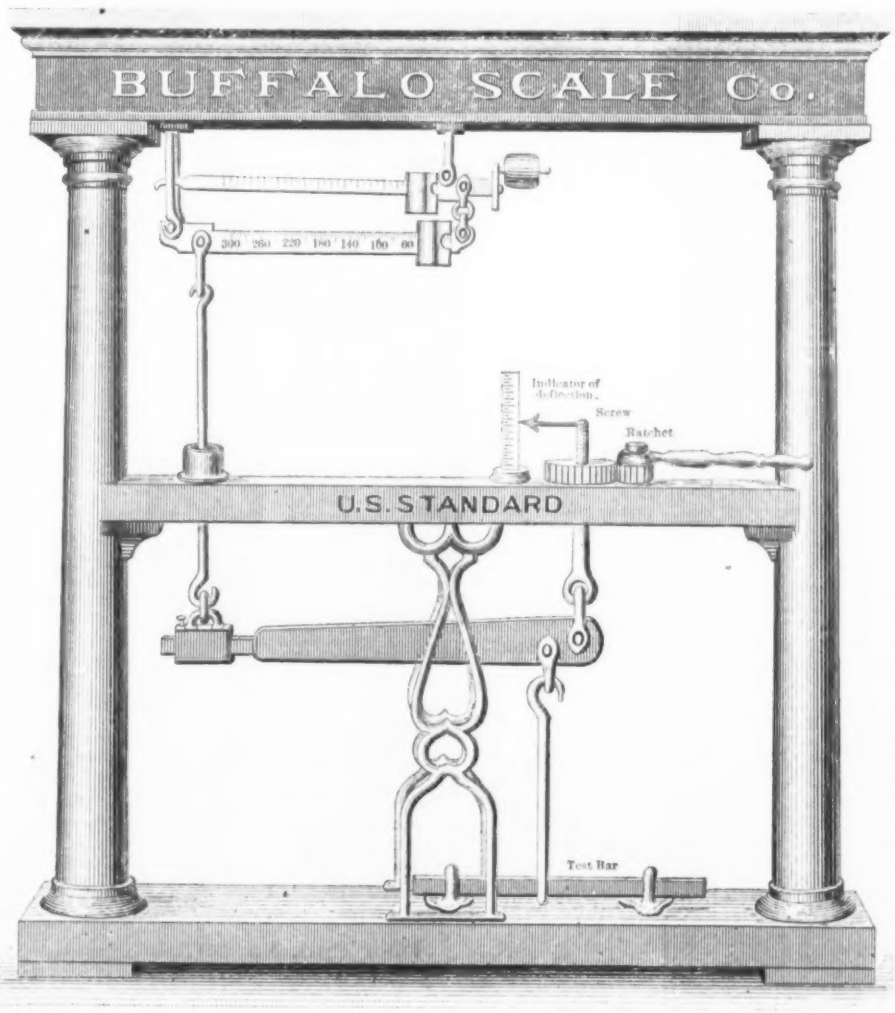
Before the wing dams, cribs and inner jetty were built the waterway was about 1000 feet in width. In September last a cyclone passed over the jetties and worked much damage to the last jetty, about one half mile in length of the concrete wall on this jetty being badly broken, and solid blocks of concrete weighing 28 tons being displaced. The channel within the jetties, however, remained uninjured. Surveys made during the year beyond the ends of the jetties, extending out to 100 feet depth of water, show a very little change to have occurred on what is sometimes called the bar. On the jetties proper no work has been done during the year. Within them work has been confined to building the inner jetty and five wing dams projecting from the east jetty. In the pass proper 11 new wing dams have been built—one at Crane Island, three near Goat Island and seven near Bayou Grande—varying from 20 to 250 feet in length. At these places the pass was wide and shoaler than in the narrower parts of the pass. In fact, the depth of water in the channel was hardly an inch more than the 26 feet of depth required. After the dams were built the current rapidly scoured out the crests of these shoals until a depth of 32 feet of water was obtained.

At the head of the South Pass there is now a fine channel 400 feet wide and having a least depth of 30 feet. The channels at the heads of Southwest Pass and Pass a l'Outre are also increasing in depth, but the bars at the mouths of these passes are reported as being very shoal. That at Southwest Pass is reported as having only a 12-foot channel through it, while Pass a l'Outre bar is said to have but 8 feet. Both of these passes are now so little used that but little is definitely known about them, except where our surveys cut into them near their heads. During the year 10 vessels grounded in the pass, jetties or near the jetties, but inspection proved that in every instance they were out of the channel, which was amply wide, deep and practicable. The appropriation for examinations and surveys is reported to be insufficient to continue the work beyond December 1, 1883. During the last fiscal year $10,290 was expended in making these surveys. An additional appropriation of $6000 is requested for the present fiscal year, and $17,535 for the fiscal year ending June 30, 1885.

The Power of Water.—According to a Western paper, the Virginia City Water Co. get their supply from Marlette Lake, on the Tahoe side of the mountain. It is supplied through a long tunnel, which issues on the crest of a high mountain opposite Mount Davidson, with Washoe Valley between. To cross this valley by a flume would be almost impossible, so the water is carried down the mountain side to the bottom, and crosses under the V. and T. Railroad track, on the divide between Washoe and Eagle valleys, then up again to the required hight in iron pipes. The depression crea ed in the line of carriage is 1720 feet, and the pressure on the pipes is 800 pounds to the square inch. One pipe is 11 inches in diameter and is ¼-inch iron, lap-welded, and 18 feet long, with screw joints. There is little trouble from it; but the other, which is 12 inches in diameter and is riveted pipe, makes more or less trouble all the time. The pipe is laid with the seam down, and whenever a crack is made by the frost or sun warping it, or from any other cause, the stream pours forth with tremendous force. If the joint is broken open, of course the whole stream is loose and goes tearing down the mountain, but usually the escape is very small. The break last week was less than ¾ inch thick, and yet the water in the flume was lowered 1½ inches by it and the pressure went down 15 or 20 pounds. It has been probably a year in cutting out, and was made by a little stream, hardly visible to the naked eye, that escaped through a joint and struck the pipe 2 or 3 feet off, eating away the iron until the pressure inside broke it through. When such a break occurs the noise can be heard for half a mile, and the earth shakes for hundreds of feet around. A break the size of a knitting needle will cut a hole in the pipe in half an hour. Such breaks are repaired by putting a band around the pipe, pouring in molten lead and tamping it in. Such a stream bores through a rock like a sandblast. The flying water is as hard as iron, and feels rough, like a file, to the touch. It is impossible to turn it with the hand, as it tears the flesh off the bones, and if the fingers are struck into the stream with the joint up the nails are instantly turned back and sometimes torn loose from the flesh.

Testing and Weighing Machinery.

A testing machine worthy of some attention, on account of its simplicity of design and reliability, is now being turned out by the Buffalo Scale Co., of Buffalo, N. Y. The machine, as shown in Fig. 1, which represents a general view, is easily operated by moving a ratchet handle with one hand and moving out the weights on the beam with the other hand. When fracture occurs, the breaking strain is accurately indicated by the position of the weights, while a simple attachment shown in the cut indicates the deflection of the bar just before breaking. Though every foundry of appreciable size should have some contrivance of this kind, by means of which to test its material, it will very often be found that the high prices attached to the machines present a serious obstacle to their extensive introduction. In the appliance here shown, however, the exceedingly simple arrangement of the whole machine enables the manufacturers to dispose of it at a comparatively low price,



Testing and Weighing Machinery.—Fig. 1.—New Testing Machine, Built by the Buffalo Scale Co., Buffalo, New York.

Fig. 2.—The Boston Platform Scale.

thus bringing it within the reach of all. It has been used with the most satisfactory results by a number of establishments in different portions of the country, and ready sales are anticipated for some time to come.

In Figs. 2 and 3 we give a perspective view, together with details of the "Boston" platform scale, manufactured by the same company, and which, we think, will be of special interest to hardware dealers, being particularly well adapted to weighing nails. The beam, as shown, is elevated, so that the figures may be easily read off without stooping. There is also an entirely new attachment, which, on account of its obvious utility, has been the subject of favorable comment. It is a very simple contrivance, called a "latch," which, being thrown to the right or left, balances the scale either with or without the scoop, and its action will be readily understood by reference to Fig. 3, which represents an enlarged view. The company are now making a full line of scales of all sizes and styles, and their goods are meeting with a favorable reception in all quarters.

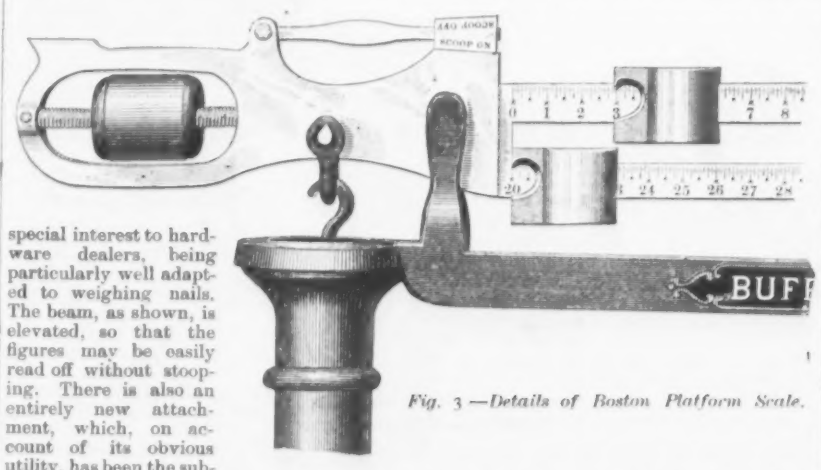


Fig. 3.—Details of Boston Platform Scale.

Railroad Statistics for 1882.

Advance sheets of "Poor's Railway Manual" for 1883 contain some interesting figures relative to the railroads of the United States in 1882. Thus it appears that at the close of that year the total mileage amounted to 113,329 miles, 11,591 having been constructed within the year. The average mileage operated for the year was 107,158. The amount of share capital issued by the several companies up to the close of their respective fiscal years was $3,456,078,196, an increase from the previous year of of $385,254,585. The funded debts of the several companies amounted to $3,184,415,201, an increase from the previous year of $352,554,496. Their floating or unfunded debts amounted to $255,170,962, an increase of $42,404,965 from the previous year. The total increase of share capital and of funded and floating debts from the previous year equaled $780,213,776. The total amount of amount of all liabilities at the close of 1882 was $6,895,664,359. The total per mile for completed mileage was $61,342. The total of stocks and liabilities for 1881 was $6,115,540,583; the amount per mile, $57,730; the total for 1880 was $5,373,015,928; per mile, $58,949; the total for 1879 was $4,872,017,517; per mile, $57,730.

The gross earnings of all the roads for their several fiscal years of 1882 were $770,356,716, an increase from the previous year of $67,066,511. Of the gross receipts, $202,140,775 were received from passengers, $506,367,247 from freight, and $61,848,734 from miscellaneous sources. The net earnings for the year were $310,682,877, an increase of $24,929,109 from the previous year. The amount of interest paid was $149,295,380, an increase of $20,708,078 from the previous year. The amount of dividends paid was $102,031,434, an increase of $9,687,244 from the previous year. The percentage in 1882 of gross earnings to investment was 11.2 per cent.; in 1881, 11.5; in 1880, 11.4; in 1879, 10.8. The percentage of net earnings to investment in 1882 was 4.5 per cent..; in 1881, 4.7; in 1880, 5.1, and in 1879, 4.4 per cent. The earnings per mile of all the railroads operated for 1882 were, gross, $7188; net, $2899; in 1881, gross, $7527; net, $3040; in 1880, gross, $7435; net, $3293; in 1879, gross, $6652; net, $2761.

From an abridged statement embracing all the railroads of the country, it appears that since 1879, a period of three years, there have been opened in the United States 28,019 miles of railroad, and that 10,463 miles were opened the past year up to the close of the fiscal years of the several companies. The extent actually opened during the calendar year was 11,591 miles. It is probable that the mileage given in the previous number of the Manual was somewhat in excess of its actual extent, in consequence of duplications by the companies themselves, they often treating leased lines as their own. The amount of earnings given in the Manual for 1881 were undoubtedly too large, from the duplication by railroad companies of the earnings of leased lines, and from an error of $10,000,000, discovered in revising the addition of the tables of the Western States for that year. The amount now given may be regarded as correct. For the purpose of getting the exact extent of mileage constructed in the past year, and the total extent of mileage in the United States, circulars were addressed to every company. Answers to these were received in nearly every instance, so that the figures here given may be regarded as absolutely correct. The increase of share capital and indebtedness of the railroad companies for the three years ending Dec. 31, 1882, was $2,023,646,842, the average cost per mile of the new mileage being, in round numbers, $70,000. The increase in the three years of the funded debts of the several companies has been $864,926,029; of their floating debts, $98,289,910; the two sums amounting to $903,215,939, a sum equaling something over $30,000 per mile of line. The cash cost of all the railroads constructed in the United States in the last three years did not exceed, probably, $30,000 to the mile, or $900,000,000 in all. To this sum is added at least $150,000,000, derived chiefly from earnings expended in improvements of old lines. It is safe to estimate that the actual cash expenditure upon all the railroads of the United States within the past three years did not exceed $1,050,000,000, a sum $973,946,842 less than the increase, in the period named, of capital and indebtedness of the several companies. Of course, such an enormous increase of liabilities over cash outlay is to be greatly regretted, and is well calculated to create a distrust of all securities, good and bad. In most of the States the general railroad laws forbid the issue of share capital unless its full equivalent is paid, but these are avoided by contracts by which a certain amount of stock and bonds are issued in full payment for the construction of a given number of miles. In all States, probably, statutes against usury cannot be pleaded in avoidance of railroad bonds. They can, consequently, be issued and sold in any amounts and at any price, the only limit being the refusal of the public to take them. Taught by the disasters of the past, we are probably entering upon a more healthy period in railroad construction. It is now seen that in such States as Ohio, and even in the State of New York, no extent of additional mileage which has not for its object the development of a particular interest—coal, for example, which is fast supplanting wood as fuel—will add materially to the amount of earnings in such States, the existing mileage in such supplying all the means and facilities wanted. In such States, consequently, with the reservations made, no new mileage of any considerable extent can be constructed at an advantage at all compensating for the unproductive outlay. The same may be said of new lines built nominally to serve as carriers between the West and the East. The existing lines are capable of transporting twice or thrice the tonnage now offering or that is likely to offer itself. The result of all such new lines will be to divide business with, and thus weaken, the old; or, unable to compete, their stocks and bonds must remain comparatively valueless. Their want of success will serve to check the further construction of all undertakings of the kind. Indeed, the uncertainty which prevails as to the enormous mass of stocks and bonds which has been put upon the market in the last three years is exerting a very salutary influence in checking or postponing new enterprises till the results of the past can be more clearly seen.

The construction of railroads in this country seems to proceed in great waves. In recurring periods it becomes the absorbing passion of our people. All this is very natural. No enterprise is so seductive as a railroad for the influence it exerts, the power it gives, and the hope of gain it offers. Every community, no matter how well supplied, eagerly welcomes a new line, for the money its cost brings it, and the promise it offers of lower rates of transportation. When there has been a considerable pause in the construction of railroads, and the traffic of old lines, which, without rivals, keep pace with the progress of the country, their success is predicated of every new line wherever situated, no matter how wanting in real merit it may be. In a highly excited state of the public mind the promoters of new enterprises have, for a time, everything their own way; for the argument on the other side can only be presented by the result itself. There never was a period in our history in which, in the construction and consolidation of railroads, the good sense of our people was so thoroughly at fault as in the period from 1879 up to and including 1882. There can be no doubt that the country is vastly richer and stronger than it was in 1873, and that there is no reason to apprehend the terrible disaster that followed that year; but confidence in our vast strength has probably led to excesses wholly disproportionate to our needs or means.

These remarks are to be received not as discouraging the construction of new lines into new territory, nor in the older States when called for in the development of mining industries capable of unlimited expansion, but to put an end to those purely speculative schemes the only object of which is the manufacture of securities for the purpose of imposing them upon the public. Attention should also be called to the enormous increase, for the same object, of stock and bonds of old companies, of which culpable examples might be given. While it is not probable that we shall ever again witness the construction, in a single year, of 11,500 miles of railroad, such construction will continue steadily and rapidly until our present mileage is doubled in extent. There are now, or soon will be, four great lines traversing the continent from ocean to ocean. These lines render every portion of it accessible, and will serve as trunks from which branch lines will radiate in every direction. Included in the available area of the United States are 3,000,000 square miles. A ratio of 1 mile of railroad to 10 square miles of area will give 300,000 miles of line. Construction will proceed uninterruptedly until such an extent of mileage is reached.

It is to the credit of the railway interest that so far there have been but very few defaults in the payment of the bonds of railroad companies. Their floating debts, though large in the aggregate, create no embarrassment. It is also a remarkable evidence of the wealth of the country that the expenditure of more than $1,000,000 for every day for three consecutive years—money almost wholly supplied by our own people—has created no strain in our money markets. This perhaps is not so much to be wondered at, as nations of the Old World having much less wealth than our own spend annually upon military and naval establishments—expenditures in one point of view wholly unproductive—sums greater than are expended annually in this country upon railroads. It is greatly in our favor that by far the greater extent of mileage constructed within the last three years has been in new territory, so that, should the investment in them be wholly sunk, the loss would be more than compensated by the advantage resulting from opening up vast tracts of fertile territory to settlement. The construction of railroads, no matter the scale on which within the past three years it has proceeded, is not likely to create anything like the widespread disaster that followed the breakdown of 1873, however much individuals may suffer. Many of the greater interests of the country are in a sound condition. There has been no undue speculations in real estate, that sure precursor of financial disaster. The embarrassments of railroads, whatever they may be, will be that of a single powerful interest, and will not, as they did in 1873, include every other in the country.

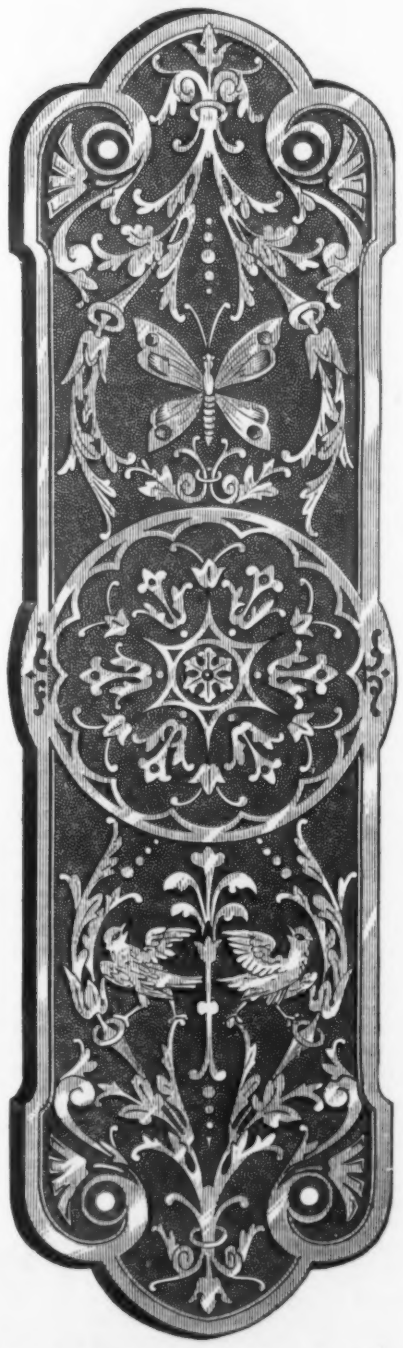
The number of passengers transported in 1882 on the railroads of the New England group of States, having a population of 3,990,529, was 65,220,934, a number 16.3 times greater than its whole population. The number transported in Massachusetts was 48,063,639, a number greater than for any other State. The number transported in the Middle group of States, having a population of 12,196,876, was 205,844,626, or, deducting 86,161,029 carried on the New York city elevated railroads, 119,683,597, a number very nearly equaling 10 times its population. The number transported in the Southern group of States, having a population of 12,255,910, was 10,875,511, a number 1,379,399 less than the population of this group. The number transported on the railroads of the Western and Southwestern group, having a population of 20,132,325, was 82,940,331, a number 4.1 times greater than its population, the lower average for this group arising from embracing in it the Southwestern States. The number transported on the Pacific group, having a population of 1,393,817, was 10,510,410, a number 7.5 times greater than its population. The total number transported on all the railroads of the United States the past year, not including the New York elevated roads, was 289,190,783, a number equaling very nearly six times the total population, 50,442,066, of the United States in 1880.

The number of passengers moved one mile in the New England group was 1,107,045,086, at a charge of 2.1 cents per mile; in the Middle States group, 2,356,226,676, at a charge of 2.3 cents per mile; in the Southern group, 559,577,836, at a charge of 2.6 cents per mile; in the Western group, 2,708,268,037, at a charge of 3.2 cents per mile; in the Pacific group, 351,942,270, at a charge of 3.1 cents per mile. The total movement on all the roads equaled 6,834,048,765 persons moved one mile, at a charge of 2.80 cents per passenger mile.

The number of tons of freight transported on the part of the railroads of the New England group of States was 28,605,416 tons, being 7 tons per head of its population. The number of tons transported on the Middle group was 166,372,589, the number of tons moved per head of population being 13.6. The number of tons moved on the railroads of Pennsylvania per head was 23.4. The number of tons transported on the Southern group was 19,199,096, the number of tons per head being 1.56. The number of tons transported in the Western group was 140,791,848, being 7 tons per head. The number of tons transported on the Pacific group was 5,526,426, being 4 tons per head. The number transported on all the railroads of the United States the past year was 360,490,375 tons, the average tons moved per head of population being very little over 7. The number of tons transported one mile on the railroads of the New England group was 1,650,009,065, at a charge of 1.7 cents per ton per mile; on the Middle States group, 14,233,884,685 tons, at a charge of 1 cent per ton per mile; on those of the Southern group, 2,040,078,971 tons, at charge of 1.8 cents per ton per mile; on those of the Western group, 20,133,946,667 tons, at a charge of 1.2 cents per ton per mile; on those of the Pacific group, 1,214,289,859, at a charge of 3.1 cents per ton per mile. The total movement on all the railroads of the United States for 1882 equaled 39,302,209,249 tons moved one mile, at an average charge of 1.2 cents per ton per mile.

While the tonnage of the railroads of the United States can be determined with sufficient accuracy, the value of this tonnage presents a much more difficult problem. The tonnage upon the Erie Canal, the great pioneer work of the country, is classified under the following heads: "Products of Forests," "Products of Animals," "Vegetable Food," "Other Agricultural Products," "Manufactures," "Merchandise," and "Other Articles." On the canal the value of each class is estimated by its officers or by the

SARGENT'S HARDWARE



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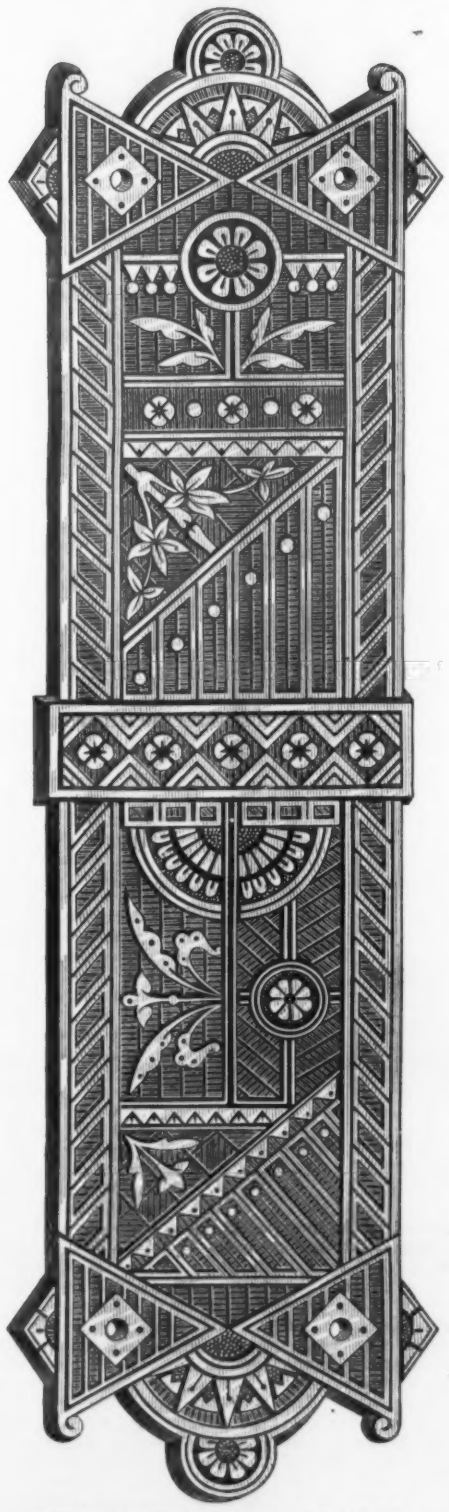

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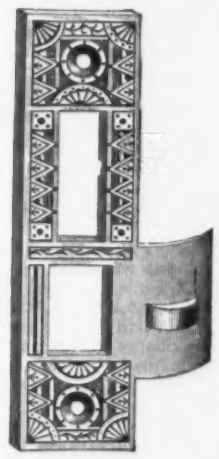
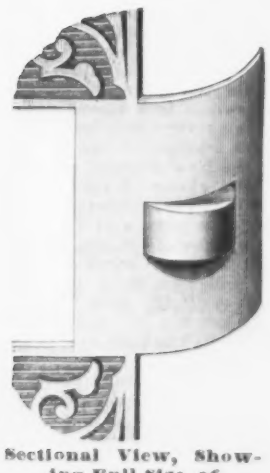
Door Pull, No. 597.

Door Pull, No. 598.

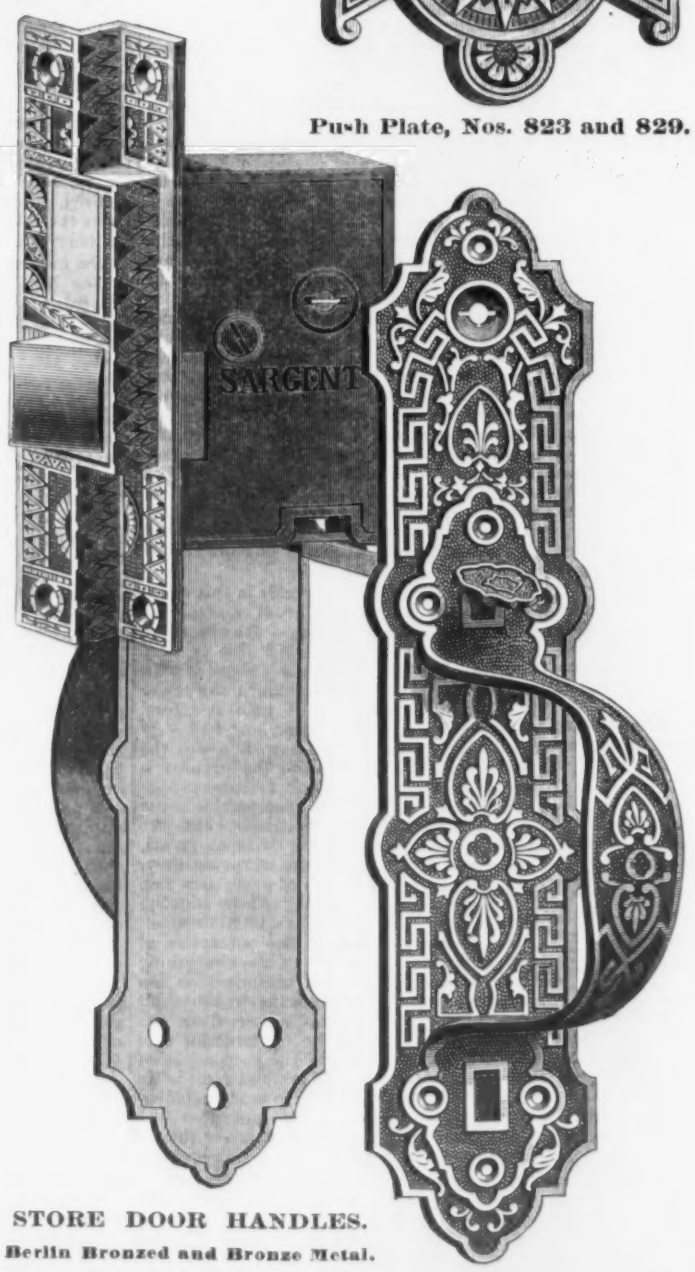


Anti-Friction Strike.

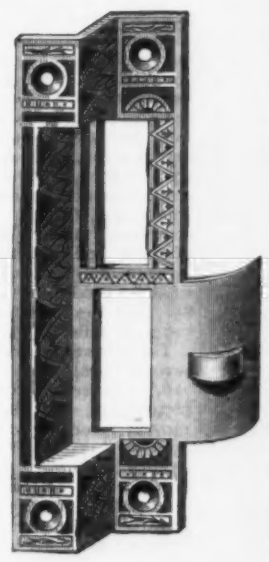
Two Flat Steel Keys.



Sectional View, Showing Full Size of Roller.



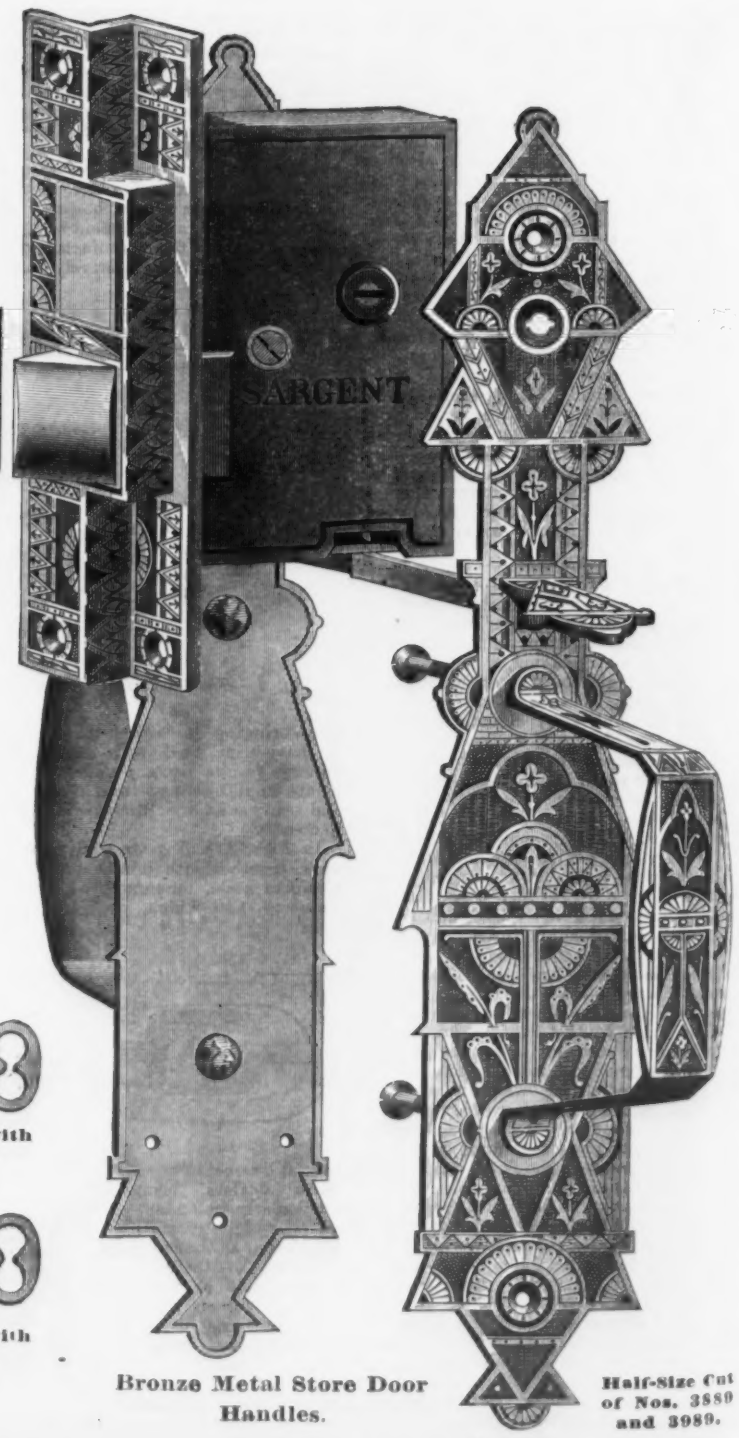
STORE DOOR HANDLES.
Berlin Bronzed and Bronze Metal.



Anti-Friction Strike.

Two Flat Steel Keys with 3-Tumbler Locks.

Four Flat Steel Keys with 5-Tumbler Locks.



Bronze Metal Store Door Handles.

Half-Size Cut of Nos. 3889 and 3989.

shipper. So long as the canal was a large carrier of all classes of freight, the average value of its tonnage was about $50. Its value is somewhat less now, the tonnage of the canal being confined to only a few articles. The railroads of New York are required to classify their freight according to the canal schedules, as will be seen in the statements for the New York Central and Erie railroads, included herein. Following the canal valuations, and estimating the products of the forest at $20 per ton, the product of animals at $150 per ton, vegetable food at $40 per ton, other agricultural products at $40 per ton, manufactures at $25 per ton, merchandise at $250 per ton, and other articles at $20 per ton, the value of the tonnage transported by the New York Central Railroad the last year was $725,000,000. At the average value of the tonnage transported by this road, $60 per ton, the aggregate value of all the tonnage transported on the railroads of the United States the past year was $22,011,533,760. A large amount of the tonnage of the railroads is twice or thrice reported by different and connecting lines. If we estimate these duplications to equal one-third of the whole, the value of the net tonnage transported by our railroads was, say, $15,000,000,000—equal to $300 per head of the population of the country. Railroad experts are the best fitted to form a correct estimate in such a matter as this, but it is not probable that our own is excessive; the probabilities are that it is below rather than above the mark.

The vast extent and variety of its productions, with railroads to give them easy access to the markets of the world, give full assurance that the commercial supremacy which the United States now enjoys among the nations is to be maintained. The enormous extent of our territory has the effect, in fact, to give uniformity of seasons and of crops, while such is their vigor and versatility that a year or two, at most, suffices to correct the mistakes that may be committed, and restore to them a prosperity which is the law, not the exception.

Self-Clinching Staples.

The accompanying engravings represent one form of Frost's patent self-clinching staples, which are now being introduced by Stiles Frost, 276 Devonshire street, Boston. The peculiar feature of these staples is a series of notches or barbs made on the inside of the wire, the action of which is to force the staple open in the process of driving into the wood, causing the notches or barbs to adhere, as shown in Fig. 2 of the engravings, to a degree not possible to obtain with the ordinary smooth-shank staple. Three different shapes are manufactured, known respectively as the "long bevel," "medium bevel" and "short bevel." The only distinguishing difference between these three styles is the amount of spread which they obtain in the process of being driven home. The one that we illustrate is known as long bevel, and is calculated to spread the least. In the manufacturer's circular we find the following particulars: The staple clinches itself, and has many times the holding power of the staples of ordinary construction. It requires no boring for inserting, and never splits the wood, and it can be driven in all kinds of wood. The staple enters the wood at an angle on the outside, presses the wood down on the inner side, which enters the notch, as shown in the cut, and prevents withdrawal. The relative strength of these staples is so great that only one is required where two or more would be used of the ordinary kind.

Fig. 1.—The Staple as Made, Ready for Driving.

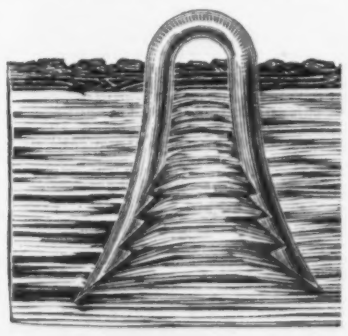


Fig. 2.—Sectional View of Staple Driven into a Piece of Wood, Showing the Tendency to Spread.

Professor Lanza, of the Massachusetts Institute of Technology, made some tests of these staples some time since, obtaining the following results: A specimen staple made of No. 7 wire, 2¼ inches long, was drawn out from a block of wood under a load of 1175 pounds. A second specimen, made of No. 9 wire, 1¾ inches long, was drawn out under a load of 810 pounds. These facts show the utility of the staples, and should be sufficient to commend them for general use.

A Singular Spectacle.—The steaming hot air as it rushes up from the depths of the Comstock mine, at Virginia City, Nev., and comes in contact with the ice-cold air above the main shafts, forms peculiar clouds never seen elsewhere, except, possibly, over the crater of some volcano. A short time since, says a local paper, the weather was arctic on the Comstock. The mercury was many degrees below the freezing point, if not below zero, all day. The extreme cold and a peculiar state of the atmosphere combined to produce a beautiful phenomenon. The steam from the various hoisting works and from the old Consolidated Virginia shaft—where the suction fan is at work—rose vertically in immense columns to a hight of some 2000 feet, and being there congealed, was wafted by a gentle breath of air from the east all over the city, where it fell in the shape of glittering particles of frost or fine snowflakes. As the sky was perfectly clear at the time and the sun shining brightly, the effect was very beautiful. The tall pillars of vapor were of silvery whiteness, and the falling particles of frost glittered like dust of diamonds.

INDUSTRIAL ITEMS.

MAINE.

The S. D. Warren Paper Mills, of Cumberland, after mature consideration, have ordered a pair of 16 x 30 inch steam-jacketed condensing Cummer engines, and expect them to yield very good results.

MASSACHUSETTS.

The Nonatun Mills, at Newton, have recently bought a Cummer engine, turned out by the Cummer Engine Co., of Cleveland, Ohio, for their mills.

The Merrimac Mfg. Co., of Lowell, have recently put in a 5-inch Curtis pressure regulator for their steam-pump, which is calculated to throw a 10-inch stream of water and to feed boilers estimated at some 7000 horse-power.

The Terry Clock Co., at Pittsfield, are to build a factory 150 feet long for their works, and hope to get in their machinery this fall. Since they have been in that town they have doubled their business. The Terry Co.'s clocks find their way to Europe, and they have orders from China.

The Pope Mfg. Co., of Boston, the manufacturers of the well-known Columbia bicycles, have done an enormous business during the present season, at times being considerably behind their orders. The company began this summer the manufacture of the Columbia tricycle, a beautiful, easy-running machine for ladies as well as for gentlemen. The Columbia machines are a credit to Boston, for in strength and durability and scientific construction undoubtedly they excel the best of English bicycles.—*Boston Commercial Bulletin.*

The needle works at Middleboro', which have been fighting through a protracted struggle in competition, have now made arrangements with other similar manufacturers whereby remunerative returns will be made for their products, and the business will be continued.

Manufacturing is soon to be resumed at the shovel works in Middleboro'.

The location of the newly-formed wire-goods company at Palmer has been agreed upon, and a building 100 x 40 feet will be erected at once. The company has been organized, with a capital of $30,000.

The old cotton-gin works at Bridgewater are filling up with various industries, which in time will prove quite an addition to the business of the place.

The requisite $20,000 capital of the East Douglas Rifle Co. has been subscribed, and preparations for carrying out the idea are being proceeded with.

The Dighton Furnace has lately been enlarged by the addition of a building 50 x 60 feet, calculated to accommodate 10 molders. The furnace has now two cupolas, and is doing an immense business.

The Cape Cod Glass Works, at Sandwich, commencing this week, double the number of pots used at the commencement for manufacturing vasa murrhina glass.

CONNECTICUT.

The special committee of the Hartford Common Council, appointed some weeks ago to examine and report on the probable advantages of establishing in that city, in corporate form, the glass works recently burned out at Wallingford, have prepared a statement, based upon an examination of the books, accounts and estimates of the company. They show an apparent gain of more than $4400 for 130 days' operation since January 1 last, upon $12,000 expenditure. This, with five large and two small smelting pots, while the new works would have 12 smelting pots, which would probably increase the profits with the production. Nor do estimates and work include the cutting department, which is nearly as profitable as the smelting and blowing department. The committee, judging from such information as they have been able to obtain, believe that with prudent management business will prove quite profitable.—*Boston Commercial Bulletin.*

The iron cap for the Russell & Erwin chimney, at New Britain, will weigh 6000 pounds. The chimney is 25 feet in diameter.

PITTSBURGH AND VICINITY.

Messrs. Park, Scott & Co., of Pittsburgh, have issued a circular dated August 1, 1883, in which they inform their customers that on that day they transferred the department of their business connected with the Lake Superior Copper Mills to Messrs. Park, Brother & Co., of that city, to whom all correspondence in that relation should in future be addressed.

From Messrs. George Shiras, Jr., and S. C. Schoyer it is learned that the creditors of Graff, Bennett & Co., and of the Grafton Iron Co., having accepted the provisions of the agreement of extension of the indebtedness of their successors, P. Harvey Miller and John R. McCune, trustees of the creditors, on Saturday received and accepted the assignments, conveyances and mortgages, new notes and bonds which were required by the agreements to be executed and delivered to them. The work of exchange of the new notes, &c., for the old ones will be commenced by the trustees as soon as they can make the necessary preparations, which will likely be in the course of a few days.

A. Northrop & Co., manufacturers of sheet-iron building and roofing material, have just completed the work of ceiling the entire building of the Express Newspaper Co., Buffalo, N. Y. They have received an order to do the same work on the Cleveland Opera House.

OHIO.

The Payson Mfg. Co., of Chicago, are running their full capacity on sash locks, anti-friction casters, refrigerator latches, and other specialties in builders' and cabinet hardware. On some items their trade has doubled during the past year. This concern is at present making 90 styles of furniture and trunk casters, embracing varieties from small No. 9 casters to heavy goods weighing 110 pounds per set and adapted to carry loads from three to four tons. The company report having sold upward of 125 tons of casters during the past two years.

Judging from recent accounts, considerable activity now prevails in the works of the Cummer Engine Co., of Cleveland. Among recent orders we find one for a 150-horse-power engine, which will furnish power for the electric-light display at the Cincinnati Exposition; a 125-horse-power engine to drive an important line of shafting at the Southern Exposition at Louisville, Ky., and still another has been chosen to furnish power at the Industrial Exposition in Boston this fall. A Cummer engine is also now being erected at the Arlington woolen mills at Lowell, Mass. Cain Bros., of Atchison, Kan., have ordered a 300-horse-power engine, and the Keokuk Plow Works, of Keokuk, Iowa., a 90-horse-power engine, with complete outfit. When the Cummer Engine Co. complete their addition (which will be used as an erecting-room) they will be enabled, by the use of three traveling cranes, to carry forward and complete 40 engines together.

Niles is not dead yet. Many people have wondered what Reeves Bros. would do with the mill they have lately bought in Canal Dover. Recently we learned that their intentions are to take the mill to Niles and place it in operation. A location has not fully been decided upon yet, but the removal of the works is a sure thing, and at no distant future. A good deal of iron has already been shipped from there to Niles, and also some boilers.—*Youngstown Register.*

Work on the Fayette Furnace, of the Jackson Iron Co., is nearly completed, and the company expect to blow in by September 1.

The Solid Steel Co. are just commencing the manufacture of steel castings at Alliance. Their foundry is driven by a 50-horse-power Westinghouse engine.

ILLINOIS.

The firm of Kingsland & Munn, of Chicago, has dissolved, S. G. Munn retiring. The firm will hereafter be known as P. S. Kingsland & Co., and will continue to manufacture and deal in all kinds of portable and stationary engines and boilers for hoisting, mining, sawmill and general purposes, together with the Munn patent feed-water heater, at the same address as heretofore.

Wheeler & Tappan have in process of construction a powerful press for the Chicago Rubber Works, an ice machine and a number of pumps, the latter to be sent to St. Louis, Mo.

At the Aurora Malleable Iron Works a brick smoke-stack 100 feet in hight and a new annealing oven will be built before resuming work in that department next month. The probability is that the main foundry building will also be extended.

Work has been started on the main building of the Aurora Watch Co.'s works, and every effort will be made to push it and machinery to completion as soon as possible. It is now anticipated that, with the start already made, construction on watch work proper, on which 250 hands will be employed, will begin early in the summer of 1884, three months earlier than at first expected.

The Smith & O'Leary Steam-Hammer Forge Works, of Chicago, are at work on an order for 30 tons of steel crowbars and 20 tons of solid box vises for a firm in this city.

Chas. F. Elmes, of Chicago, has another contract to build 10 Harrison coal-mining machines. His works are busy on general work.

MISSOURI.

We condense the following from the *Age of Steel*, regarding the industries of St. Louis: The St. Louis Stamping Co. have started up their Granite Rolling Mills. Smith, Beggs & Ranken are specially busy on ice machines, orders for which they have in abundance. The Rohan Bros. Boiler Mfg. Co. have so many orders that life with them is a weary burden. The St. Louis Chain Works are increasing their working force, are full-handed with orders, and making large shipments to California. The Mississippi Glass Works expect to start up on or about September 3.

Industries of the Chief Cities.

Mr. Lorin Blodget, of Philadelphia, in a letter to *Bradstreet's*, writes as follows:

The industries of the larger cities, and especially of New York and Philadelphia, are undergoing changes and presenting developments of great interest and great importance, not only in the ordinary sense as measures of the growth of business, but also in the highest social sense as indications of the future welfare of their rapidly increasing population and of the vast numbers soon to be gathered in these and other great cities of the country. The proportion of their population engaged in productive industries increases more rapidly than the simple growth in numbers. In 1870 New York had but 13¾ per cent. engaged in productive industries, and in 1880 there were 227,352 persons, or nearly 19 per cent. of the entire population. Philadelphia had 20⅘ per cent. engaged in productive industries in 1870 and nearly 22 per cent. in 1880, as first taken, but an entirely complete enumeration would have shown more. In 1882 the number reported as being so engaged was over 240,000, or 25 per cent. of an assumed population of 950,000. All the larger cities show the same rapid increase in the proportion of industrial population, comparing 1880 with 1870, or with any previous census, and these striking facts are of the highest interest, and most encouraging as regards the welfare of the countless thousands who in the absence of these industries would have no resource.

These industries themselves are also changing their form and becoming a better resource for those engaged in them. Wages are better, and the conditions of labor are less restricted. The easier conditions in this respect are very striking in Philadelphia, and probably not less so in New York. In the census year 1879-80, 227,262 persons employed in the city of New York received $97,030,021 in wages, or the very large sum of $427 each for the year, 71,795 of the persons employed being females and 9378 being children. The proportion paid to these two classes cannot be distinguished, but it may be supposed to average for both not over $250 per year. At Philadelphia 185,527 persons are reported to have received $64,265,966 in wages, or $346 each for the year, the number of females being 56,818 and of children 15,634. This last is undoubtedly a short or deficient report, but our present purpose is only to show that the wages paid are really liberal in any case, and that the conditions of employment are such as to reach all the members of a family. The minimum rate of wages for both cities may be fairly stated to be $9 for men, $5 for women and $2.50 for children per week; at least this is true for Philadelphia, and it is fair to assume that as the general aggregate is greater at New York the minimum cannot be less.

In contrast with this average of rates for 1880, there was in Philadelphia not more than half as much paid to most classes of labor 30 or 40 years ago. In June, 1835, an official report of the wages paid to females in book-folding was made; 19 employers, with 168 female folders employed, reported their wages as realizing from $2 to $3.50 per week only, the average being $3.25. On January 16, 1839, a report on the earnings of sewing women showed that they could obtain at piecework not more than 94 cents per week, and societies were formed for the amelioration of their condition. During all that early period in the history of the greater cities the wages of labor, whether productive or unproductive, were so low that suffering was constant, and the conditions of constraint were such that frequent and violent social disorders occurred. It was long believed that with the natural increase of population this constraint, and the consequent liability to suffering and disorder, would also increase, and that there would be no relief except through a partial disposal of these populations. The writer recalls a strong impression to this effect, which continued long after the labor disturbances of 1844 to 1850.

Nothing is more certain than that the situation of the employed classes of the cities has for 10 years past been in marked contrast with the state of labor 20 years previous. This change is due to the growth of the productive industries and to the diversity which has become so great and general. The industries have also themselves changed, having become transformed by better methods. The destitute shirt-maker of 1839, and, indeed, for many years afterward, no longer exists; the new appliances of labor have of themselves driven destitution away. Diversity of employment is, however, the leading cause of the great amelioration of the social condition of the great body of the people, especially in the cities. The number of distinct industries so conducted as to employ persons at remunerative wages has increased threefold within 25 years, and the change from single or household employments to co-operative employment and the disc pline of the workroom increases the efficiency of labor to three or four times its capacity when isolated. The writer has seen eight women at one table, working steam embroidering machines on fine hosiery, and easily earning at piecework $2 each per day, their employer being himself better paid than if they were working by hand at $2 or $3 per week.

The great progress of the cities is effected through this better organization of labor and the rapid advancement in appliances and machinery. It is well enough known how great the advantage the factory has over isolated handwork, but organization and discipline are found to be as easy and effective in the single workroom and upon the most advanced and even artistic forms of industry as they have been shown to be in the factory. The taste of the age demands a far greater variety of supplies for all classes of uses than before, and the accumulation of wealth justifies liberal expenditures. The census of 1880 gave, in very crude form, a tabulated statement of the industries of 20 leading cities, the first and more serious defect being the limitation of the numbers or the failure either to obtain or to distinguish the industries in full. But imperfect as the list is in each case, the statements are valuable and instructive. The following is the number assigned to each city:

Baltimore	118	Milwaukee	62
Boston	142	Newark	78
Brooklyn	121	New Orleans	59
Buffalo	71	New York	204
Chicago	139	Philadelphia	195
Cincinnati	125	Pittsburgh	70
Cleveland	77	Providence	69
Detroit	61	St Louis	117
Jersey City	35	San Francisco	115
Louisville	73	Washington	52

In each case, however, there is a large list of single industrial establishments not scheduled separately, but merged in a "miscellaneous" aggregate—this number ranging from 43 as the lowest, at New Orleans, to 116 as the highest, at Boston, and averaging about 70. It is gratifying to find that there are so many, and it is evident that in a very short time the schedule would be doubled if the rule of putting in all industries presenting two or more establishments should continue to be observed. At New York and Philadelphia the condensation is much too great; such items as "iron and steel," "foundry and machine-shop products," "printing and publishing," "drugs and chemicals" and others might be expanded so so as to name and define each distinct commercial product. To do so would add 70 or 80 to the enumerated list for each city, and would give the most valuable information as to the actual state of those industries now entirely covered up under a general term of no distinctive value.

It is also apparent from these schedules that few or no industries are now the subject of so-called neighborhood exchange—at least in the great cities. The single artisan or workman, alike with the organized shop, works for the general market. The small boot and shoe maker works in part on quantities for the wholesale dealer; the clothier or tailor has almost ceased to work for customers wholly, many of them not at all, and all of them, wherever located, work in part for the wholesale dealer, and therefore become participants in the commercial phase all industries take on. This gives them a new importance, and removes a ground of distinction that was quite marked so recently as 1860. An attendant element of the present situation, and possibly to some extent a cause for the rapidly-increasing diversity of industries, is the attempt of large dealers or distributors of all articles bought by shoppers to produce themselves many of the articles they sell. Some have already gone so far as to have manufactured for themselves, and by workmen paid by them, no less than 20 to 30 classes of fabrics or articles. They therefore create a large manufacturing industry directly connected with all their own operations—a proceeding that may fail on economical grounds, but it is a powerful stimulant to the development of a varied general industry.

The percentage for each of the 20 cities of the population engaged in productive industry is itself a study worthy of more attention than it has received. The census figures of 1880 illustrate this relation so much as to be very full of interest, but they are far from being conclusive:

	Per cent.		Per cent.
Baltimore	17.0	Milwaukee	15.1
Boston	16.3	Newark	24.0
Brooklyn	8.4	New Orleans	4.4
Buffalo	11.6	New York	18.7
Chicago	11.7	Philadelphia	21.9
Cincinnati	21.4	Pittsburgh	24.5
Cleveland	13.5	Providence	19.9
Detroit	13.8	St. Louis	11.8
Jersey City	8.3	San Francisco	12.6
Louisville	14.1	Washington	4.8

The Bullion Trade.

Some recent foreign commercial advices give the aggregate stock of coin and bullion in the great national banks of England, France and Germany at about $350,000,000 in gold and $320,000,000 in silver. At the same time the United States Treasury had on hand $202,000,000 in gold coin and bullion and about $117,000,000 in silver. It will be observed that this contrast exhibits a relatively much larger bank reserve in silver in England, France and Germany than that in possession of the National Treasury of the United States. But it must be remembered that in France the volume of both gold and silver in actual circulation is far in excess of that of any other country in Europe or America. So important is this fact that the stock of silver accumulated in the Bank of France sometimes exceeds that of gold.

Nevertheless, England is the great center of exchange for the whole civilized world, and her standard of value being exclusively gold, her financial policy is always directed in such a way as to insure the pre-eminence of gold in the Bank of England, whose bullion reserve, therefore, is carefully watched by the whole body of bankers in London. Since, however, the United States became so great a financial power and so strong in acquired wealth and the world's exchanges, it has been found necessary by the European bankers to practically unite the operations of the great national banks of England, France and Germany, for the regulation of the bullion trade and for the defense of the European stock of gold against the drain caused by the balance of trade being in our favor in the international dealings with the commercial world.

By reference to some recent American commercial statistics, we find that although the exports of bullion and coin in this country are again in excess of the imports, yet most of the exports are in silver, while the imports are in gold. These figures would seem to indicate that if the compulsory coinage of silver dollars could now be stopped and suspended by the National Government, the foreign demand for silver might again revive sufficiently to be of great importance to our position in reference to the world's exchanges. Our principal difficulty at the present time appears to consist in the steady diminution of the production of our own domestic gold mines, while at the same time there appears to be absolutely no limit to the possible increase of the production of silver. In point of fact, it does not admit of question that if the civilized world could provide a market for our silver as readily and to the same extent as it so long did for our gold, we might become the richest country in the world and the strongest in commerce and finance.

Prussian Industrial Census.—From the returns of the census on June 5, 1882, it appears that there were at that date 27,287,863 inhabitants, of whom 9,261,882 were children under 14 years of age, and, therefore, unfit for labor; 6,313,573 persons occupied households, and 11,742,485 represented the economic power of the nation. Broadly speaking, these last were grouped as follows: Agriculture, gardening and forestry, 4,692,348, of whom 1,230,080 were women; mines, factories and building, 3,065,218 men and 585,408 women; commerce and transport, 766,127 men and 145,579 women; day laborers, 160,640 men, 118,283 women; army, church and professions, 352,431 men, 60,661 women; no profession, 352,431 men, 353,064 women; servants, 30,752 male, 855,425 female. The first four groups, comprising those who are employed in industrial undertakings, are further subdivided into managers and foremen—2,805,728 men, 612,720 women; clerks, 181,583 men, 8339 women; operatives, 4,466,942 men (or 46.85 per cent.), 1,458,231 women (or 15.30 per cent.) A census was also taken last January of domestic animals, with the following results: Cattle used in cultivation, 3,124,046, being an increase of 5 per cent. over the corresponding date in 1873; horses, 2,403,288, being an increase of 6 per cent.; mules, 572, a decrease of 39 per cent.; donkeys, 6313, a decrease of 28 per cent.; oxen, 8,735,589, about the same as before; sheep, 14,716,730, a decrease of 26 per cent.; pigs, 5,801,795, an increase of 35 per cent.; goats, 1,071,368, an increase of 13 per cent.; beehives, 1,232,231, a decrease of 16 per cent.

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BOOKS ON CHEMICAL ANALYSIS AND ASSAYING.

Bloxam.—Metals; Their Properties and Treatment. By Prof. C. L. Bloxam; 105 illustrations, 312 pages, 12mo, cloth; 1872. . $1.50

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Bodemann and Kerl.—A Treatise on the Assaying of Lead, Silver, Copper, Gold and Mercury. Translated from the German of Th. Bodemann and Bruno Kerl. By W. A. Goodyear; illustrated by plates, 214 pages, 12mo, cloth; 1865 . . . . . $2.50

This translation, from a somewhat old but standard work, is not intended for beginners, but presupposes some knowledge of elementary chemistry.

Brush.—Manual of Determinative Mineralogy. By Prof. Geo. J. Brush; 4th edition, revised and corrected, 104 pages, 8vo, cloth; 1881 . . . . . $3.50

This treatise, with an introduction on blow-pipe analysis (constituting the determinative part of Dana's Mineralogy), contains tables for the complete classification and determination of minerals. The new system of nomenclature is adopted, and the work is one of the latest and most valuable books on this subject.

Davies.—Metalliferous Minerals and Mining. By D. C. Davies, M. E. 2d edition, revised, 148 illustrations, 450 pages, 8vo, cloth. London, 1880. . . . . $5

This book is an excellent and systematic description of the conditions under which metallic ores are found in the different countries of the world. It explains the origin of deposits, and defines the localities occupied by the various metallic ores, with practical details in the working of mines and the dressing of ores

De Koninck—Dietz.—A Practical Manual of Chemical Analysis and Assaying. By L. L. De Koninck and E. Dietz; American edition, edited with notes and an appendix on iron ores, by A. A. Fesquet; 282 pp., 12mo, cloth, 1873 . $2.50

This work treats exclusively of chemical analysis and assaying as applied to the manufacture of iron from its ores, and to cast iron, wrought iron and steel. The apparatus and operations are described, and there is also a chapter on the assay of fuels. The work is very thorough, and the methods of analysis of the different elements are clearly intelligible.

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1 42-in. swing Upright Drill, B. G. & S. F. New.
3 24-inch Up. Drills, Bk. Gr. and Self Feed. New.
1 20-inch Lever Feed Upright Drill. New.
1 20-inch Lever and Wheel Feed Upright Drill. New.
1 Sensitive Drill New.
1 Pratt & Whitney 4-Spindle Drill. 2d hand.
1 Garvin's 4-Spindle Drill. 2d hand.
1 4-Spindle Drill Press. New.
1 3 " " " "
1 2 " " " "
2 Gang or Multiple Drills, 3 and 6 spindles. 2d hand.
1 Single Spindle Light Drill, Table Feed. New.
1 Single Spindle Profiler. New.
1 Two " " Light. New.
2 Profilers. 2d hand.
2 Turret Head Chucking Machines. 2d hand.
1 No. 1 Screw Machine, wire feed. 2d hand.
1 No. 2 Screw Machine, wire feed. New.
1 Screw Machine. New. Not wire feed.
1 " Slotter. "
1 Cutter Grinder. "
6 Emery Grinders. New.
1 Slitting or Circular Shear. New.
2 Tapping Machines.
1 Upright Bor. and Turn. Mill, 10 ft 4 in. swing. 2d h.
1 12-in. Slotting Machine, 50-in. swing. New.
1 8-in. " " 36-in. swing. New.
1 Hydraulic Wheel Press for 72-in. Wheels. New.
1 13 ft. Bending Rolls. 2d hand.
1 Squaring Shear, 22 in. New.
3 Hand Shears. 2d hand.
3 Power Presses. New.
1 Foot Press. New.
1 Screw Press. New.
1 Drop Press. New.
1 Drop Press, 50 lb. Hammer. 2d hand.
1 Hand Lever Punch. 2d hand.
1 Lot Heavy Polishing Frames. 2d hand.
2 Shafting Straighteners. New.
1 8 x 8 Upright Engine. New.
1 10 x 12 Horizontal Stationary Engine. New.
1 9½ x 12 in. Horizontal Stationary Engine. New.
1 5 in. x 6 in. Horizontal Stationary Engine. New.
1 5 x 12 Horizontal Stationary Engine. 2d hand.
1 10 H. P. Cylinder Boiler. 2d haud.
1 10 H. P. Upright Boiler. New.
1 10 H. P. Upright Boiler. 2d hand.
1 No. 1 Steam Pump. 2d hand.
2 Grindstones and Frames. New.
1 48 in. Blacksmith Forge. 2d hand.
1 Lot 15 in. Smoke-stacks. 2d hand.

Wood-Working Machinery.

1 Saw Table. New.
1 Double Saw Bench. New.
1 24-in. Surfacer Rotary Bed. New.
1 Band Sawing Machine. New.
1 Scroll " "
1 Rod Machine. Self Feed. "
1 Sandpapering Machine. 2d hand.
1 8-in. Molder, 4 sides. 2d hand.
1 Edge Molding Machine. 2d hand.
1 Large Lot 2d-hand Pulleys and Hangers.
And lot of others, both new and 2d hand.

If the list does not contain what you want, write us.

J. M. BADGER & CO.,
49 DEY STREET, New York City.

For Sale.

THE WHOLESALE AND RETAIL

HARDWARE AND STOVE BUSINESS

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F. J. HOGAN & CO.,

Little Rock, Ark.

LONG ESTABLISHED. A CLEAN STOCK OF ABOUT $20,000. SATISFACTORY REASONS FOR SELLING.

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32 in. x 21 ft.; Planer, 32 in. x 7 ft.; large Upright Drill. Tools and other Machinery, second-hand, for sale low by A. PURVES & SON,
South and Penn sts., Philadelphia.

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FEB. 21, 1883.

1 Engine Lathe, 14 in. x 5, 6, 7 and 8 ft. Grant & Bogert.
1 " " 26 in. x 12 ft., Grant & Bogert. New.
1 " " 48 in. x 14 ft. Good order.
1 " " 36 in. x 12 17 ft. New.
1 " " 42 in. x 14 ft. New.
1 " " 14 in. x 6 ft. Star Tool Co. New.
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1 " " 18 in. x 8 and 10 ft. Lodge & Barker. New
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1 " " 11 in. x 4 ft. and 5 ft. Prentiss. New
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1 Planer, 60 in. x 60 in. x 17 ft Good order.
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1 " 16 in. Lever Table Drill. New.
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1 16-in. Upright Drill. New.
1 20-in. " Prentiss. New.
1 24-in. " Prentiss. New.
1 30 in. " Prentiss. New.
1 26-in. swing B. G. & S. F. Drill. Blaisdell. New
1 28-in. " " " " " "
1 38 in. swing, B. G. & T. F. Drill. New.
1 15-in. Shaper. Gould & Eberhardt. New.
1 10-in. Shaper. Gould & Eberhardt. New.
1 15-in. Shaper. Hendey. New.
1 24 in. Shaper. Hendey. New.
1 24-in. Shaper. Hendey. Good order.
1 9-in. Shaper. Hewes & Phillips. New.
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Full Assortment of Milling Machines, Spindle Drills, &c., of Garvin's. New. J. & Lamson.
1 each Nos. 2 and 4 Screw Machines, Wire Feed. Jones
2 No. 2 Lincoln Millers. Good order.
2 No. 2 Lincoln Millers. New.
1 Hand Lathe, 12 x 4, 5 and 6 ft. New.
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1 Boring and Turning Mill, 50 in. New.
1 Boring and Turning Mill, 72 in., 2 Heads. New.
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New York Agency of
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H. PRENTISS & CO., 42 Dey St., N.Y.

For Sale.

Established 1873. Gardner Bros "Standard Savage" Fire Brick Works, situated at Ellerslie Station, Md., on Baltimore and Ohio R. R. Also on Bedford Branch of P. R. R. Has convenient shipping arrangements on both roads. Works consist of two independent plants of machinery, so constructed and arranged that they can be run separately or together. One of the buildings entirely new, erected last year. Capacity of works, over 14,000 bricks per day. Mount Savage clay in abundance, mined on royalty, and delivered direct into works by gravity. Inclined plane and tram road, large portion of which was laid with new Tee rail last year. New artesian well, capacity over 30 barrels per hour. Also mountain stream, delivering water by gravity into tanks at works. Seven acres of land, with nine good tenements. Everything in first-class order for manufacturing and shipping brick direct from kilns into cars. Good and growing trade established. Brick unquestionably as good as the best made of Mount Savage clay. Statements of business done will be shown to responsible parties desirous of purchasing. Our good will and influence to go with sale. Any further information desired will be cheerfully given by
GARDNER BROS.,
Lockport, Pa.

For Sale.

Established in 1864. Gardner Bros.' Gas Retort and Fire Brick Works, situated at Lockport Station, on P. R. R., 60 miles from Pittsburgh, Pa. The works consist of complete plant for manufacturing Clay Gas Retorts, Settings, Blocks, Tile and Fire Brick. Capacity, about 100 retorts, with necessary settings, and 100,000 fire brick per month. Clay and coal mined by ourselves within short distance of works and hauled in wagons. Over three acres of land, with all necessary buildings, a number of tenements and town lots. P. R. R. has side track alongside our kilns. Good trade established. Our good will and influence to go with sale. Statement of business done will be shown to responsible parties desirous of purchasing. Any further information desired will be cheerfully given by
GARDNER BROS.,
Lockport, Pa.

For Sale.

The Industrial Works of Shamokin, owned and successfully carried on for a number of years by the late Wm. Brown, deceased, consisting of Foundry and Machine Shop, and a large stock of Patterns regarded as part of the property. Boiler Shop, Blacksmith Shop and Factory for the manufacture of heavy coal screens. Well located in the borough of Shamokin, Pa., with the best facilities for shipping by rail, and surrounded by a district contributing all the work that a shop of that kind can possibly turn out. Easy terms of payment are offered to suit a purchaser of limited capital. For list of Tools and further particulars apply to
WM. McILVAIN & SONS,
Manufacturers of Boiler Plate and Tank Iron,
Reading, Pa.

For Sale

AT A BARGAIN,

in one of the pleasantest cities of Eastern Massachusetts, not 12 miles from Boston, a Hardware business, established twenty years and the best stocked store in the vicinity.

Address L. B. J.,
Office of *The Iron Age*, 83 Reade st., New York.

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Stock of Hardware, Stoves and Tinware, in one of the best towns in Southern Minnesota; population about 3000, and growing rapidly. Nice clean stock; will inventory about $6000; satisfactory reasons for selling. Address
W. P. RUMSEY,
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For Sale.

A Four-Cylinder Steeple Compound Engine of late design, of 100 nominal H. P. Large enough for 500-ton Hull. Address
SITES & GILL,
222 and 224 So. Third Street, Philadelphia, Pa.

For Sale.

One Granulator, with attachments.
One large Mixer, with attachments.
One No. 5 Vacuum Pump.
Two Sugar Packers.

The above is a portion of the Machinery formerly used at Baltimore Steam Sugar Refinery, Baltimore, Md. For information apply to
GEO. B. GRAHAM,
P. O. Box 689, Baltimore, Md.

For Sale.

One 600 lb. Davy Bros.' Steam Hammer; one 1500 lb. Morgan, Williams & Co.'s Double Standard Steam Hammer; one Heavy Wood Frame Trip Hammer; one 10 H.-P. Side Fed Cut-off Engine; two 60 H.-P. Tubular Boilers, with No. 4½ Deane Steam Pump, and all connections, Mud Drums, &c. Have not been used to exceed 90 days—practically new. Also a general assortment of new and second-hand Engines, Boilers and Machinery. Cheap for Cash.

M. F. PERRY,
43 South Canal Street, Chicago, Ill.

Trade Report.

BRITISH IRON AND METAL MARKETS.

[*Special Cable Dispatch to The Iron Age.*]

LONDON, WEDNESDAY, Aug. 22, 1883.

Scotch Pig.—The market remains in an unsettled condition. We quote makers' prices as follows:

Coltness,	alongside,	Glasgow	60/
Langloan,	"	"	59/
Gartsherrie,	"	"	56/6
Summerlee,	"	"	57/
Carnbroe,	"	"	55/
Glengarnock,	"	Ardrossan	55/
Eglinton,	"	"	40/
Dalmellington,	"	"	49/
Shotts,	"	at Leith	59/6

Lighterage from Ardrossan to Glasgow is 1/ ₱ ton.

Cleveland Pig.—The market is irregular. No change to note in quotations. We quote as follows, f.o.b. shipping ports:

Middlesboro'	No. 1 Foundry	43/6
"	No. 2 "	41/6
"	No. 3 "	39/ @ 39/6
"	No. 4 Forge	38/

Bessemer Pig.—The market is without change to note, ruling weak. W. C. Hematites are quoted unchanged at 49/ @ 50/ for mixed lots, Nos. 1, 2 and 3, equal parts, f.o.b. shipping ports.

Blooms.—Nothing doing.

Manufactured Iron.—The market is irregular. We quote at works:

		£	s.	d.		£	s.	d.
Staff. Ord	Marked Bars	7	10	0 @		.....		
"	Medium "	6	5	0 @	6	15	0	
"	Common "	6	0	0 @	6	5	0	
Hoops, 20 W. G. and over.								
"	Common Best	7	0	0 @	7	5	0	
"	Medium	6	5	0 @	6	15	0	
"	Common	6	10	0 @		.....		
Sheets, 20 W. G. and under.								
"	Ordinary Best	8	15	0 @	9	5	0	
"	Common	8	0	0 @	8	5	0	
Welsh Bars		5	5	0 @	5	7	6	

Steel Rails.—The market continues very unsettled. Ordinary Sections are quoted £4. 5/ @ £4. 15/, f.o.b. shipping ports.

Iron Rails—Dull and nominal. Welsh, 30 lb. and upward, are quoted, nominally, £4. 15/ @ £5. 10/, f.o.b. shipping ports.

Old Rails.—The market continues unsettled. We quote Old D. H.'s, £3. 12/6 @ £3. 15/, c.i.f. New York.

Scrap.—The market is irregular, and quotations are lower. Heavy Wrought is quoted £3 @ £3. 2/6, c.i.f. New York. Bessemer Crop Ends are quoted 60/ for run of the mill, f.o.b. shipping ports.

Copper.—The market is a little steadier and prices are higher. We quote Best Selected, £69 @ £70, and Chili Bars, £63. 15/ @ £64. 5/.

Tin—Is firmer and quotations are advanced. We quote Straits, Ingot, spot, £93. 15/ @ £94. 5/, and futures, £94 @ £94. 10/.

Tin Plates—Are not so steady. We quote:

Tin Plates, 10 x 14,	1st qual.	Charcoal	19/6 @	21/6
" "	2d "	"	18/6 @	19/
" "	1st "	Coke	17/6 @	18/
" "	2d "	"	15/9 @	16/3

Spelter.—The market is quiet and unchanged. Ordinary is quoted £15 @ £15. 2/6 at shipping ports.

Lead—Is steady. Common English Pig is quoted £12. 10/ @ £12 15/.

Freights.—Steam from Glasgow to New York, 5/ @ 6/; Liverpool to New York, 4/@5/; Liverpool to Philadelphia, 5/@6/6, and London to New York, 7/6 @ 9/6.

TRADE AND FINANCE.

Office of *The Iron Age*,
WEDNESDAY EVENING, August 22, 1883.

Despite the reaction on the Stock Exchange from the apparent buoyancy of one week ago, there is a steady improvement in general business, both as to tone and volume. The movement is tardy, and in some respects disappointing, but is sufficient to indicate that the recent disturbance in speculative circles had comparatively little effect beyond the individuals directly concerned. The public are spectators rather than participants. The aggregate bank clearing-house returns from 26 leading cities show that during the past week the volume of business was much enlarged. In this city there was a small increase over the corresponding week last year, but outside of New York the increase is 6.6 %. Philadelphia shows a gain of 25.2 %; Chicago, 5 %; Baltimore, 5.3 %; San Francisco, 11.8 %; Cincinnati, 1.2 %; Pittsburgh, 16.7 %; New Orleans, 17.9 %; Louisville, 17 %; Kansas City, 38.7 %; Memphis, 56.4 %, and Syracuse, 27.6 %. Indianapolis shows the results of the recent bank flurry in a decrease of 35.9 %. The manufacturing cities continue to hold their own fairly well. In the dry-goods trade New York jobbers report more activity among buyers and a considerable aggregate of sales, while from all centers there is evidence of an improved distribution. The tone of the market is very steady. The feature of the week in this department is a special and peremptory trade sale of 14,000 packages of the most popular cotton fabrics, to take place August 24 and 25. Western advices are all hopeful. A St. Paul paper says: "Distrust has yielded to confidence, under the assurance of abundant harvests," and in the same vein the Chicago *Times* predicts "a splendid trade from the States around us," while the trade with Dakota is likely to show a handsome increase.

The business failures this week comprise one or two additional stock jobbing houses, a bank whose cashier is a confessed victim to Wall street fascinations, and others more or less affected by the recent collapse in stocks. That the mercantile classes should have calmly withstood a sudden fall of 20 % is regarded as evidence of soundness in their condition. The average weekly return of failures thus far in this third quarter of the year is 6 less than for the second quarter, and 89 less than for the first quarter. "Rightly understood," according to *Bradstreet's*, "the fact that the events of the last two weeks have not precipitated worse disasters gives full assurance that the country is approaching a period of great activity and higher prices without passing through a loan market panic—a time when solvent men are forced to suspend."

The imports of merchandise at New York during the past week were quite heavy, the total being $10,802,374, of which $7,528,242 represents general merchandise and the remainder dry goods. Sugar, coffee, tea, undressed hides, tin and hemp were the principal items. Since January 1 the imports aggregate $296,534,191, compared with $321,233,089 for the corresponding period of 1882 and $276,120,914 for 1881. The imports of specie during the week amounted to $370,168, and the exports of specie to $195,000. The total exports of specie since January 1 are $8,221,833, and the total exports for the same time last year were $8,848,124. The exports from this port last week were augmented by new arrivals of grain and provisions, making the large total of $8,374,438, against $6,931,671 for the same time last year. There was an active movement in breadstuffs, and the shipments of wheat are considerably above the usual average. Since January 1 the total exports are $225,206,512, against $211,027,954 the corresponding period of 1882 and $245,218,170 for 1881.

Money continues abundant on call, and time loans are easy on good collaterals. The announcement that the Treasury will redeem weekly, commencing August 22 (to-day), United States bonds of the 121st call to the extent of $5,000,000, without rebate of interest, removes still further all apprehensions of stringency during the autumn. The bank returns for the week show a decrease of $2,454,025 in surplus reserve, which now stands at $6,879,650, against $1,887,125 at the same time last year, and $717,700 deficiency at the corresponding date in 1881. Declining reserves must be expected for some time to come.

The Stock Exchange market shows a sharp reaction, attended with a marked decline in the volume of business. The tone at the close is still feverish and fluctuating. On Thursday Western Union was a special feature, prices touching the lowest point reached in a long time, and the whole list was more or less affected. The recorded sales were said to embrace a large block held by ex-Governor Cornell. On Friday an upward movement occurred, attributed to purchases on foreign account, easy money, &c. On Saturday a sharp attack on Denver again unsettled the market, and on Monday general weakness was manifested, the Villard shares suffering severely. Denver fell from 29¾ to 23⅞, owing to alleged difficulties in securing a president, and Transcontinental declined from 69½ to 65 @ 65¼. The failure on Tuesday of the small brokerage firm of Schuldt & Knight had no significance. The situation to-day is unchanged. The principal dealings at the close were in Oregon and Transcontinental at 64, 64⅜, 64, 64⅝, 64⅜; Northern Pacific at 78½, 78¼, 78⅝, 78¾; Lake Shore at 106½, 105, 105½; Denver at 25⅛, 24½, 24⅝, 24½; Central Pacific at 65¾, 65½, 66¼, 65⅝; Louisville and Nashville at 45⅛, 44¾, 45⅛; Michigan Central at 84½, 84, 84½; Western Union at 77⅜, 77⅛, 77¼; Lackawanna at 122½, 122⅜, 122⅜; Canada Southern at 51¾ @ 51; Erie at 29⅜ @ 28¾; St. Paul at 102, 101⅝, 101⅞, 101¾; Texas and Pacific at 26¾, 26½, 26¼.

The crop outlook continues favorable, and the prospect for a good business over all lines traversing the agricultural districts was seldom, if ever, better than at present. The eastward-bound trunk lines show a further improvement in their flour, grain and provision traffic.

The general markets, as a rule, are quiet and prices low, but not materially changed. Breadstuffs may be regarded as strong. In wheat, better weather reports from the other side are a source of weakness. Corn is fairly steady. Cotton is about steady on moderate sales. Lard is lower. Turpentine is a little improved. Wool is quiet. In tobacco there is a moderate business on export account. Sugar is active and advanced on some of the lower grades. Hides and leather are dull.

The tendency toward a lower range of prices noticed during the past twelve months throughout the country is in nothing more apparent than in the food staples. The following table giving average prices for several leading commodities during each of the five years ending with the dates noted, and at the close of July, 1883, will indicate the existing lower range:

	For 5 years ending with—					Close of July.
	1855.	1865.	1870.	1876-77.	1879-80.	1883.
Wheat, bush.	$1.19	1.29	1.43	1.32‡	1.21	1.17¼
Ind. corn, bush.	.74‡	663	98	.587*	.543†	.63
Wheat fl'r, bbls.	5.76	6.74	8.03	6.47*	5.87†	4.10
Ind. corn-m'l, bbls	3.69	4.52	5.42	3.37*	2.79†	2.75

* 1877. † 1880. ‡ 1875.

The variations in prices in leading hog products during the same periods have been equally notable.

On the 1st of July there were 1,119,512 depositors in the savings banks of New York State, and of these 593,170, or nearly one-half, were in New York City. The number of depositors in the State increased 24,642 in six months. Of the total $483,662,000 savings invested, $267,841,000 are those of the New York City banks; of the total $420,831,000 due depositors, New York City has $231,525,000. The deposits show an increase of $8,684,000 in six months, or about 3.8 %, while the number of depositors increased about 2.2 %.

Government bonds have generally been strong and higher, but were lower at the close, as follows:

	Bid.	Asked
U. S. 4½, 1891, registered	112⅝	112¼
U. S. 4½, 1891, coupon	113⅛	113⅜
U. S. 4, 1907, registered	110⅛	110⅜
U. S. 4, 1907, coupon	110⅛	110⅜
U. S. 3 per cents	103¼	103½
U. S. Currency 6s, 1895	128	—
U. S. Currency 6s, 1896	129	—
U. S. Currency 6s, 1897	130	—
U. S. Currency 6s, 1898	132½	—
U. S. Currency 6s, 1899	133	—

In State stocks there were few transactions. Louisiana consols sold at 65.

MINING STOCKS.

The closing prices of mining stocks were as follows:

	Bid.	Asked
Amie	14	16
Alice	....	2.25
Alta Mont	5	6
Bodie	21	30
B., H. & E., n	⅜	½
Bulwer	70	75
Bassick	9½	10⅝
Barcelona	....	40
California	37	....
Climax	8	9
Con. Imp	4	6
Con. Va	62	70
Crysolite	1.00	1.10
Central Arizona	20	....
Dahlonega	2	4
Dunkin	20	30
Decatur	2	3
Eureka Con	6¾	....
East Or	95	96
Elko Con	11	18
Findley	....	7
Father de Smet	3.50	....
Great Eastern	1	2
Green Mountain	67	71
Horn Silver	6½	6⅞
Hall Ander	1.00	1.05
Independence	....	55
Lacrosse	7	....
Leadville Con	26	....
L. Pittsburg	63	70
L. Chief	....	40
Mexican	3 50	....
Navajo	2 90	3.25
N. Belle	....	7.00
N. Belle Isle	35	....
Ophir	3.50	....
Ontario	29.25	31.00
Ori. & Mil	12	15
Pine Line cer	1.08	1.08¼
Rappahannock	6	8
Robinson Con	60	61
Rising Sun	....	4
Red Elephant	4	....
Sierra Nev	4.40	....
Standard	5½	....
Silver Cliff	....	14
Sutro Tun	20	23
Sierra Gr	1.05	1 10
Stormont	29	30
Silver King	6½	....
Sonora Con	24	26
Union Con	5⅝	....
Unadilla	1	....

GENERAL HARDWARE.

Trade is going on very much as at our last writing. There is some dissatisfaction at the smallness of the volume of business, which is accounted for in various ways by different people. The fact, however, remains that there is less activity than was expected. The recently formed combination of Steel Goods manufacturers has fallen through. As to Hoes, there seems little prospect of any further agreement among the makers, but an effort will again be made to come to an understanding in the case of the other goods.

One of the saddest catastrophes which it has ever been our duty to report is the loss of the yacht Mystery, which left New Haven on the 10th inst., bound for Nantucket, which it was expected to reach in three or four days. On board were four young men—Leicester and Rupert Sargent, the only sons of George H. Sargent, of Sargent & Co.; Robert H. Hawkins, of the New Haven Ruffle Co., and a Mr. Bartlett, of this city. Nothing has since been heard of her, and the friends of those on board have been forced to believe that they have all perished. The only hope was that they might have been driven off to sea and been picked up by some vessel; but this hope has been destroyed by the finding of a body at West Falmouth, Mass., wearing a life preserver marked, as were those on board the Mystery, "C. H. Northam." The Messrs. Sargent were young men of great promise, and gave every evidence of being worthy to bear the great responsibilities to which, in the ordinary course of things, they would have succeeded. Their bereaved parents will have the heartfelt sympathy of the trade in their terrible affliction.

H. C. Blossom, of Wm. Bingham & Co., Cleveland, Ohio, who has been traveling abroad for his health, died recently in Hamburg. He had been in the Hardware business over 40 years, and was very highly esteemed by a large circle of friends.

Nails continue to be in good demand and short supply. An occasional difficulty is experienced in filling orders for special sizes out of stock. The price is still $3 per keg, subject to slight concessions for large lots. The factories are now running full, and the prospects are favorable for a continued good fall trade. The future will, however, depend to a considerable extent on the condition of the Western Nail trade. If it is well held, there is apparently no other element of disturbance to the present satisfactory condition of the Eastern trade.

C. G. Hussey & Co., of Pittsburgh, have arranged with Durrie & McCarty, No. 97 Chambers street, New York, to represent their line of manufactures in the Eastern

and Southern States. Durrie & McCarty are at all times authorized to sell Planished Copper and every description of Sheet Copper, Copper Bottoms, Yellow Metal and Brass Kettles at the manufacturers' best prices and terms.

The American Tool Co. have issued a new illustrated catalogue of 46 pages, showing the various styles of Tool Chests—both furnished and empty—which are sold by them. As the only concern in the United States who are exclusively engaged in this business, they show a larger assortment than any other manufacturer. They have added a line of Machinists' Empty Tool Chests, adapted to the wants of dealers in Machinists', Railway and Telegraph Supplies, as they are made very strong and heavy, to stand rough handling. This catalogue will be mailed on application. The following are the present discounts, 30 days, or 1 % for cash in 10 days:

Boys' Chests, Nos 55 to 6½, Gothic, inclusive (pages Nos 1 to 5)	50 %
Gentlemen's Chests, No. B, Gothic (page No. 6)	50 %
Youths' Chests, Nos. 2A and 1A to 4, inclusive (pages Nos. 8 to 14)	40 %
Gentlemen's Chests, Nos. 4½ to 6½, inclusive (pages Nos. 16 to 20)	30 %
Farmers', Planters', Railroads, Mines and Carpenters', Nos. 7 to 13, inclusive (pages Nos. 22 to 31)	20 %
Housekeepers' Chests, complete (pages Nos. 33 to 36)	50 %
Machinists' Chests, empty (page No. 37)	50 %
All Eureka Chests (pages Nos. 39 to 45)	50 %

The Francis T. Witte Hardware Co., 111 Chambers street, New York, have issued a neat pamphlet of 186 pages, printed in concise form and illustrated with small cuts, giving their prices for a general line of Hardware, Cutlery, Guns and Tinware. Instead of following the usual practice of list prices and discounts, this company have adopted the plan of quoting net cash prices, from which they say there is no discount except in certain cases for quantities. They find that this system has given satisfaction to their customers, and they will be glad to send their price list to any one in the trade on application.

The following announcement will explain itself:

UTICA, N. Y., August 10, 1883.

To the Trade.—We have this day given the agency for the full line of our manufactured Forks, Hoes, Rakes and Hand Agricultural Implements of all descriptions to Messrs. W. H. Quinn & Co., of 99 Chambers street, New York, who will represent us in the States of Maine, New Hampshire, Vermont, Massachusetts, Connecticut, Rhode Island, New Jersey, and the cities of New York, Philadelphia, Baltimore, Washington and Richmond, who will call upon the trade in that territory, and are hereby authorized to quote our lowest factory prices for home and export trade. Price lists and discount sheets will be furnished by them on application. Soliciting for them a fair share of your orders, we remain, yours truly,

HUNTLEY & BABCOCK AGL. CO., LIMITED.

IRON.

American Pig.—Trade is very quiet. The agents for some well-known brands which stand very high in this market report not a single sale in the past week. Others have been selling small quantities daily. Notwithstanding the dullness, there seems to be no cutting of prices, and quotations are firmly held on No. 1 Foundry, while there is no special weakness in other qualities. We hear of inquiries for round lots at a shade under the market price, but business of this kind is refused. Members of the Iron trade who have recently returned from the West report a better feeling there, and hopefulness is the rule here. Many do not hesitate to predict better business in September, but no advance in prices is looked for. The steady depletion of stocks which is reported from every quarter would seem to indicate that consumption has overtaken production, inasmuch as consumers have not for some time been carrying any stocks, but have been purchasing from hand to mouth. A few good-sized purchases would, in this condition of affairs, undoubtedly cause a decided change in the character of the market. It is possible, however, that matters may move along for several weeks as they have been doing, and consumers will take the chances of the market, preferring to let the makers carry stocks. No sales of Pig Iron have been made on the Metal Exchange in the past week. We quote No. 1 Foundry $22 @ $23, the higher figure for very choice Iron. No. 2 Foundry has sold at $19.50 @ $21, and, as it is in good supply, it is not so firmly held as No. 1. Gray Forge ranges from $18.50 to $19.50, with most sales at $19.

Scotch Pig.—There is a fair consumptive demand, which about keeps pace with arrivals, though an occasional lot is thrown into store which has been ordered in an irregular way. These irregular lots are so small, however, that they do not affect prices generally, which continue about as they were, viz.: Eglinton, $21 @ $21.50, from ship and yard; Carnbroe, $22.50 from ship and $23 from store; Coltness, $23.75 @ $24 from ship; Shotts, $24 from ship; Glengarnock, $22.50 to arrive, and $23 from yard; Gartsherrie, $24 from yard; Langloan, $23.75 @ $24 from ship; Summerlee, $23 @ $23.25 from ship; Carron, $23 from ship. Scotch Coal miners are insisting on an advance of 6d. per day, which causes an uneasy feeling among Scotch Iron makers.

English Iron.—It is reported that another lot of 5000 tons of Bessemer Pig Iron has been sold, to arrive, at about $21, which makes 15,000 tons sold in the past 10 days. A lot of 500 tons was also sold at about the same price. Dealers now express themselves as firm at $21.50, believing that the market is a little stronger and that buyers will realize that prices are at bottom. Spiegeleisen is not very active, but prices are possibly a little firmer than they were; 10 % commands about $25.50, and 20 % about $31, with small transactions reported.

Bar Iron.—A considerably better feeling exists this week, although there is still a complaint of dull business from some stores. In the aggregate transactions have been greater, and manufacturers' agents report a good inquiry. Owing to an advance in the price of Old Rails, there is a firmer feeling in Common Bar Iron, although there has not yet been an actual advance out of stores. We learn from dealers that few mills are soliciting orders at present, and this seems to indicate that at present prices the manufacture of Iron is not remunerative, and at the same time causes a feeling of confidence in its future appreciation. We quote Bar Iron from store at $2.30 @ $2.40 for Refined, and $2.10 @ $2.20 for Common. The lowest quotation from mills in the vicinity is $2.05 at mill for Iron at all worthy of the name of Refined. Some Pittsburgh Iron has recently been bought for this market, but it could not be had under $2, free on board. Freight is 18¢ ℔ 100 lb delivered on wharf here.

Structural and Shaped Iron.—The demand for Shapes for building purposes is very good. Beams are quoted at 3.5¢, in round lots, delivered on the wharf. Angles sell at 2.75¢, and Tees at 3.25¢ out of store.

Sheet Iron.—The demand is fair, but not brisk. Quotations range from 3.1¢ up, according to gauge.

Plate Iron.—There is a very good demand, and prices are well maintained. Orders are in this market from distant points for quite large blocks. Tank ranges from 2.5¢ to 2.75¢, although it is a matter of doubt whether orders could now be placed at the inside figures. Refined Plate Iron commands 2.85¢; Shell, 3¼¢ @ 3⅜¢; Flange, 4¼¢ @ 4⅜¢; Extra Flange, 5¢ @ 5¼¢.

Steel.—The volume of trade is fair for the time of the year, but unsatisfacory in regard to prices, which are unremunerative. Best quality American Tool Steel may be quoted at 11¢; Crucible Machinery, 6½¢ @ 7¢; Bessemer and Open-hearth Machinery, 4¢ @ 5¢. The best English Tool Steel is quoted at 16¢. Quite a demand exists for homogeneous Steel Plates, which sell at 5¾¢ @ 6¼¢, according to quality.

Steel Rails.—We hear of sales on account of Western mills aggregating 12 000 to 15,000 tons, for early delivery, on private terms. Some small lots have brought $40 at tidewater, being needed at once. The usual quotation for reasonably early delivery is $38 @ $39 at Eastern mills, and $40 at Western. For December delivery, $37.50 at mill is named. Most of the mills are now sold up for this year, and a few have contracts which extend into 1884. They are not seeking business at present prices, however, and prefer to await developments.

Old Rails.—In the absence of actual business there is much conjecture as to what Old Rails are really worth. The price asked is from $23 to $24, but this seems to be considerably above local buyers' views, which are from $21 to $22. Orders are in the market at intermediate figures, however, so that it is hardly possible that the extremely low figures named will be realized at present.

Scrap Iron.—There is very little doing, and the trade is about as dull as it can well be. Nevertheless, the supply is not large and dealers are very hopeful. No. 1 Wrought Scrap has been sold at $25 from yard, but buyers are not sought at that price, although outside lots are occasionally sold as low as $24, while small quantities from ship bring only from $22 to $23.50, owing to uncertainty as to quality. There is very little doing in Cast Scrap, which is quoted at $17 @ $18 for best quality.

SALES ON METAL EXCHANGE.

The following sales have been reported during the week:

WEDNESDAY, August 15.

No transactions.

THURSDAY, August 16.

No transactions.

FRIDAY, August 17.

10 tons Banca Tin, August, at .... 21¼¢

SATURDAY, August 18.

50 tons Straits Tin, Aug.-Sept. shipment, at 20⅞¢

MONDAY, August 20.

No transactions.

TUESDAY, August 21.

20 tons Straits Tin, Aug.-Sept. shipment, at 20⅞¢

WEDNESDAY, August 22.

No transactions.

METALS.

Copper.—There has been little doing during the week, some 100,000 lb Lake Superior selling at 15¢ @ 15⅛¢, which is the closing quotation, while other brands range between 14¢ and 14¾¢. Best Selected improved £1 in London the past few days, and was cabled last night £69, while Chili Bars still stood £64. A cable dispatch from Lima states that the Chilean army will move down to the coast for withdrawal on the 15th proximo, which is much sooner than had been hoped. We receive from London to-day, the message below: "Market a little steadier and prices higher. Best Selected, £69 @ £70, and Chili Bars £63. 15/ @ £64. 5/."

COPPER ORE AND COPPER EXPORTATION FROM SPAIN DURING THE FIRST FIVE MONTHS.

	1881. Tons.	1882. Tons.	1883. Tons.
Ore	12[illegible],196	251,510	265,007
Ingot copper	6,3[illegible]8	9,599	9,741

Manufactures may be quoted as under: Bottoms, 24¢; Braziers, 24¢; Sheathing, 22¢, and Bolt Copper, 24¢.

Tin.—The market has been only moderately active at 21¼¢ for Straits Tin, while L. & F. is worth 21½¢. London cabled yesterday £93. 15/. To-day we are wired from there as follows: "Market firm and quotations advanced. Straits Ingot, spot, £93. 15/ @ £94. 5/, and futures, £94 @ £94. 10/." Messrs. W. T. Sargant & Sons, London, in their circular of August 3, say: "A sudden but short spurt took place by the withdrawal from this market to New York of about 750 tons from our stocks. It was not known at the time, nor, in fact, is it quite certain yet, whether this was done on account of a passing scarcity of available Tin in New York, or whether the dealers in that market take a sanguine view of the future course of prices, and have determined to carry an increased quantity of Tin. It caused a rapid advance of £3 ℔ ton, of which about half has since been lost, owing to a cessation of this special demand. Consumption in other quarters continues on a full, but not expanding, scale. Holland is delivering rather less, and London a little more, to supply the wants of the trade. Supply continues full from the Straits, and without material change from other quarters. It is stated, on what we believe to be reliable authority, that about two-thirds of the London stock is Tin bought by investors a long time ago, at prices much above current values. It is therefore a matter of considerable importance to watch the movements of the London and New York dealers, to see how they will work upon the exceptionally small quantities likely to be available within the next few weeks." *Tin Plates.*—There has been a fair jobbing demand, nothing very large, prices remaining steady. We quote at the close, large lots, ordinary brands, ℔ box: Charcoal Bright, $5.70 @ $6.12½; do. Ternes, $5.15 @ $5.35; Coke Tin, $5.05 @ $5.25, and do. Ternes, $4.75 @ $4.87½. Liverpool is steady; Coke at 16/ @ 16/6, and Charcoal, 18/6 @ 20. From London we are told that the market is not so steady.

Lead.—Some 200 tons Common Domestic sold at $4.20, and several hundred tons besides in small lots at 4¼¢. The market closes steady at $4.20 @ $4.25. In *Refined* nothing beyond small lots transpires in the way of sales, and these go at 4¼¢. St. Louis keeps tolerably firm at $3.95, Hard, and $4, Soft.

EXPORT OF PIG LEAD FROM SPAIN DURING THE LAST 15 YEARS.

	Tons.		Tons.		Tons.
1868..	48,314	1873..	70,981	1878..	88 068
1869..	73 673	1874..	84,384	1879..	106,830
1870..	76,867	1875..	91,738	1880..	92,399
1871..	90,434	1876..	98,805	1881..	110,420
1872..	94,705	1877..	110,051	1882..	116,132
Tot'l	383,993	Tot'l	455,959	Tot'l	513,840

	1881.	1882.	1883.
First 5 months......	42,897	47,442	51 068

The above statistics by quinquennial periods show that in ten years the Spanish export has increased about 33 % and that it is going on this year at the rate of about 120,000 tons ℔ annum. From London we are wired to-day that the market is steady, with quotations same as last week. Manufactures are quoted as follows: Lead Pipe, 6¾¢; Sheet Lead, 7½¢; Tin-lined Lead Pipe, 15¢ ℔ lb, and Block-tin Pipe, 45¢, less the usual discount to dealers.

Spelter and Zinc.—Common Domestic Spelter has been quiet during the week, at 4½¢ @ 4¾¢, as to brand, while Silesian is nominally worth 5¢ @ 5⅛¢. We quote Bertha Refined, 7¾¢, and Bergenport, 9½¢. *Sheet Zinc* has been only moderately active at 6¢ @ 6⅛¢. From London we receive to-day the ensuing cablegram: "Market quiet and unchanged, with Ordinary, at shipping port, £12. 10/ @ £12. 15/."

SPANISH CALAMINE EXPORTATION.

	1881. Tons.	1882. Tons.	1883. Tons.
First five months	9,927	14,700	17,258

SPANISH PRODUCTION AND EXPORT.

	Output of Ore. Tons.	Metallic Spelter obtained. Tons.	Calamine exp'd. Tons
1865....	70,158	1,325	20,557
1870.....	113,583	3,785	50,797
1875.....	100,174	3,8[illegible]1	42,778
1880.....	50,521	4,221	36,415
1881.....	42,911	7,032	39 758

Total European Spelter production in 1882, 245,000 tons.

Antimony—Has been quiet at 9¼¢ for Hallet, and 10¼¢ for Cookson.

COAL

The advance in the prices of Anthracite announced by the Pennsylvania company one week ago has not yet brought out any response from other companies, but it is generally understood that new circulars will be issued about September 1. The demand is not active, but the large present output of 700,000 tons per week is all taken care of in some way or other. A steady business is expected until the close of the season. Bituminous Coal is dull, but the manufacturing demand is better, and large contracts will be placed in the coming month. Last week's Anthracite product is estimated at 729,940 tons, an increase of 50,327 tons. It brings the year's total so far up to 17,604.960 tons, an increase of 1,172,635 tons.

FOREIGN TRADE MOVEMENTS.

Included in the imports for the week ending August 17 were leading articles of merchandise valued as follows:

	Pkges.	Value.
Anvils	25	258
Brass goods	22	1,970
Bronzes	31	3,018
Chains and anchors	26	1,084
Clocks	107	10,185
Copper	...	371
Cutlery	160	57,370
Guns	243	22,001
Hardware	5	274
Iron, pig, tons	7,157	118,179
Iron, sheet, tons	1.7	7,252
Iron ore, tons	989	2,096
Iron cotton ties	3,000	2,428
Iron, other, tons	1,740	76,522
Machinery	29	7,346
Metal goods	351	23,246
Nails	60	3?5
Needles	30	9,359
Old Metal	...	231
Platina	1	2,895
Pins	44	2,245
Plumbago	704	8,785
Saddlery	23	4,072
Steel	5,435	43,100
Spelter	447,157	17,118
Tin, bxs	97,013	459,850
Tin, slabs, 13,382; lbs., 1,143,532.	.....	239,203
Wire	13	3,210
Zinc oxide	102	993

The quantity of metals and hardware imported compares with previous dates as follows:

	For the week.	33 weeks of 1883.	Same time 1882.
Cutlery, pkgs	160	5,000	4,744
Hardware, pkgs	5	821	725
Iron, R. R., bars	....	10,642	83,040
Lead, pigs	....	5,432	18,673
Steel, pkgs	5,435	2,255,143	1,278,142
Tin, bxs	97,013	1,305,587	1,457,420
Tin slabs, lb.	1,143,532	12,993,213	11,017,699

EXPORTS

	Quan.	Val.
Dutch West Indies.		
Sew. ma., cse.	1	$25
Ptlm., gals...	150	15
Dutch East Indies.		
Ptlm., gals.	698,800	68,750
Stettin.		
Ptlm., gals.	341,856	27,344
Konigsberg.		
Ptlm., gals.	192,475	15,350
Antwerp		
Mach'y. pkgs.	19	500
Clocks, pkgs..	4	103
Hdw., pkgs..	11	198
Mf. iron. pkgs	12	1,072
Ptm., gls.	1 289,150	98,600
Saws, cs....	12	62
Flensburg.		
Ptlm. gals.	144,495	11,200
Hamburg.		
Copper, casks	5	725
Ptlm., gals.	457,834	35,416
Mach'y, pkgs.	11	2,640
Hdw.. pkgs...	19	1,238
Cop. mate., bgs	924	10,000
Sew. ma., cs..	873	10,004
Bremen.		
Ptl., gls.	1,545,594	123,753
Hdw., pkgs...	27	720
Mach'y, pkgs.	5	375
Ag. imp., pgs..	2	175
Saws, cs......	9	107
Elsinore.		
Ptlm., gals.	533 891	42,287
Amsterdam.		
Clocks, case..	1	66
Hdw., pkgs...	14	447
Avonmouth Dock.		
Rollers, cs....	40	165
Liverpool.		
Pumps, pkgs..	8	325
Ag. imp., pkgs	34	1,243
Ptlm., gals....	5000	900
Plumb. mat'ls, pkgs.......	3	120
Cutlery, case.	1	70
Mf steel, cs..	2	100
Nails, kegs..	50	171
Mach'y, pkgs.	33	7,183
Sew. ma., cs..	965	14,177
Cop. mat., sks.	3456	39,125
Hdw., cs......	72	1,893
Clocks, pkgs..	594	12,899
Mf. iron, pkgs	9	295
Windmill.....	1	525
Nkl. plates, cs	3	350
Scales, cs.....	56	1,300
Rifles, cs.....	51	10,556
Copper, cks ..	87	15,120
Bristol.		
Ag. imp., pkgs.	2	75
Hdw., cs	3	200
Tacks, bxs....	5	106
Hull		
Hdw.. pkgs..	115	1,887
Pumps, pkgs.	8	423
Ag imp, pkgs	6	293
Sew ma., cs..	439	3,947
Clocks, pkgs..	43	917
Mach'y, pkgs	12	902
Scales, cs.....	95	2,052
Nova Scotia.		
Ptm, gals....	7112	681
Ag. imp., pkgs	31	118
British East Indies.		
Ptlm.. gals.	225,050	23,068
London.		
Hdw., pkgs ..	200	1,890
Scales, cs.....	19	86
Wat. wheels.	2	468
Guns. &c., cs.	58	16,800
Mt. cases, cs..	2	262
Sew. ma., cs..	3	1,500
Nails, cs......	14	432
Ptlm., gals.	769,265	60,944
Clocks, pkgs.	233	8,331
Mach'y. pkgs.	26	7,004
Cartridges, cs.	611	14,899
Ag. imp., pkgs	25	722
Pistols, case..	1	80
Mf. iron, pkgs	15	490
Rifles, cs.....	69	19,436
Pumps, pkgs.	3	90
Saws, cs......	8	425
Glasgow		
Hdw., cs......	15	321
Ag. imp., pkgs	5	150
Scales, pkgs..	17	265
Tubes.........	52	1,800
New Brunswick.		
Ptlm.. gals..	13,600	1,375
Fount. mat'l, pkgs.....	5	123
British West Indies.		
Ptlm., gals.	25,727	2,595
Nails, kegs...	200	745
Iron safe.....	1	200
Hdw., pkgs...	71	991
Mach'y, pkgs.	14	381
Sew. ma., cs..	4	117
Iron knees.	1400	267
Pumps, pkgs.	3	40
Mf. iron, pkgs	149	1,129
Nails, pkgs...	9	172
Clocks, pkgs..	14	288
Scales, cs.....	4	46
Ch's.&c., pkge	1	151
Cutlery, cs....	9	123
British Possessions in Africa.		
Hdw., pkgs...	18	231
Mf. iron. pkgs	27	703
Ag. imp, pkgs	17	192
Sew. ma., cs..	6	320
Clocks, pkgs..	11	278
Canada.		
Tin plts., bxs.	66	276
French Possessions in Africa.		
Ptlm., gals.	129,683	11,024
French West Indies.		
Sew. ma., cs..	4	200
Ag. imp., pkgs	4	80
Spanish Possessions in Africa		
Ptlm., gals.	4000	380
Hayti.		
Mf. iron, pkgs	6	39
Ptlm, gals...	300	33
Hdw., pkgs...	8	53
Havre.		
Mach'y, pkgs.	20	1,940
Mf. iron, pkgs	4	93
Ag. imp., pkgs.	26	2,000
Cooper. cks..	225	42,750
Hdw., pkgs...	40	1,220
Ptlm., gals.	202,502	21,500
Marseilles.		
Ptlm., gals.	313,490	20,377
Wh. m't'l, cks.	5	150
Cette.		
Ptlm., gals.	153,811	10,861
Bordeaux.		
Ptlm, gals..	252,552	17,[illegible]47
Corunna.		
Ptlm., gals.	225,850	19,825
Barcelona		
Ptlm., gals.	176,309	13,223
Uruguay.		
Ptlm., gals.	118,000	11,875

	Quan.	Val.
Clocks, pkgs..	17	560
Ag. imp., pkgs	240	9,200
Wire, bxs.....	50	890
Africa.		
Ptlm., gals.	363,320	34,515
Clocks, bxs...	91	1,958
Cuba.		
Mf. iron, pkgs.	3915	7,418
Hdw., pkgs ..	264	3,238
Lead, pigs....	8	52
I. pipe, pkgs.	73	404
Ag. imp., pkgs	31	910
Cocks, case..	1	170
Sew. ma., cs..	214	5,476
Tacks, cs.....	2	27
Car wheels.....	106	1,343
Boilers........	4	1,078
Solder, case..	1	38
Launch.......	1	900
Wire g'ds, cs.	4	465
Tubes, cs....	7	60
Clocks, pkgs..	3	82
Tin plate, bxs.	4	34
Ptlm., gals..	57,869	5,254
Tin, pigs.....	11	220
Mach'y, pkgs.	524	8,765
Gauges, pkgs.	3	210
Meters	100	664
Cutlery, cs ..	58	1,234
I. plates, pkgs	73	544
Nails, kegs...	243	941
Brass g'ds, cse	1	100
Nails, pkgs...	12	115
Pumps, pkgs.	14	914
Filters	2	1,3[illegible]0
T hoops, pkgs.	2	33
Argentine Republic.		
Ag. imp., pkgs	622	23,612
Iron, casks....	20	370
Clocks. pkge..	1	64
Cutlery, case.	1	40
Mf. iron, pkgs	7	121
Ptlm., gals...	10,000	925
Hdw., pkgs...	511	8,056
Tacks, cs.....	80	436
Saws, case....	1	31
Nails, pkgs..	50	813
Mexico.		
Mf. iron, pkgs.	203	1,1[illegible]0
Cutlery, cs....	146	3,665
Cartridges, cs	19	478
Pumps, pkgs.	20	817
Nails, cs......	19	195
Scales, cs.....	40	1,025
Cop. g'ds, cs..	3	112
Ag. imp., pkgs	18	380
Clocks, cs....	8	180
Pmd shells, cs	2	221
Nails, kegs....	15	60
Hdw., pkgs....	113	1,243
Mach'y, pkgs.	75	5,319
Sew. ma., cs..	204	5,710
Pistols, cs.....	10	3,540
Per. caps. cs..	7	398
Skates, case..	1	60
Tacks, cs.....	6	72
Ptlm. gals.	32,200	3,103
Venezuela		
Hdw. pkgs...	151	1,543
Ptlm., gals....	9390	1,062
Cutlery, cs....	13	392
Sew. ma., cs..	15	196
Mf. iron, pkgs	145	2,927
Saws, cs......	2	31
Mach'y, pkgs.	17	527
Nails, pkgs...	23	206
Steel bars....	7	72
Needles, case.	1	30
Sew. ma., cs..	43	1,287
Pumps, pkge.	1	40
Nails, kegs. ..	55	161
Fount's. pkgs	10	231
Derrick.......	1	1,665
Iron. pkgs....	302	1,913
Anvils........	2	52
Cot. gins, cse.	1	68
Clocks, cs....	2	98
Cop. plt., box	1	63
Genoa		
Sew. ma., cs..	36	850
United States of Colombia.		
Mf iron, pkgs	325	2,697
Revolvers, cs.	6	2,576
Chain, piece..	1	60
Car wheels...	81	395
Yel. metal, cs.	5	431
Railroad cars.	80	24,625
Ag. imp., pkgs	114	850
Axles.........	24	156
Scales, cs.....	4	87
Saws, cs.....	2	204
Hdw., pkgs. .	154	2,281
Sew. ma., cs..	148	2,289
Mach'y, pkgs.	78	3,795
Cutlery, cs....	57	1,134
Ptm., gals....	8210	904
Cartridges, cs	71	1,060
Clocks, cs...	11	164
Spikes, kegs..	35	171
Nails, pkgs...	9	164
Firearms, cse.	1	40
Chains casks	6	307
Guns, cs......	4	239
W. cloth, bxs.	2	222
Central America.		
Mf iron, pkgs.	34	256
Scales, cs....	2	23
Ptlm., gals....	400	42
Hdw., pkgs ..	24	527
Nails, kegs....	18	50
Brazil.		
Ag. imp., pkgs	29	830
Sew ma., cs..	116	1,081
Brasses, bxs..	2	5[illegible]9
Sew ma oil, cs....	38	289
Mach'y. pkgs.	14	1,452
Stmpdwre, cs.	7	4[illegible]3
Rifles, cs.....	7	1,1[illegible]9
Irons, cs.....	45	230
Iron safes....	[illegible]	3,717
Pumps, pkgs.	14	1,170
Ptlm., gals.	212,803	21,414
Mf. iron. pkgs	62	1,138
Hdw... pkgs...	219	3,100
Clocks. cs.....	75	1,[illegible]98
Scales cs..	27	127
Cutlery, cs....	286	6,683
Nails. kegs....	31	101
Nails, cs....	20	144
Cartridges, cs	28	475
Revolvers, cs.	3	355
Rails	498	3,023
Lisbon.		
W. mills, pkgs	81	1,500
Trieste.		
Ptm., gals.	594,785	43,500
Pozzuoli.		
Ptlm., gals.	129,454	9,061
Chili.		
Hdw., cs......	52	1,000
Mf iron, pkgs.	8	55
Nails, kegs....	870	2,874
Iron safes....	10	1,210
Nails, cs......	50	213
Ptlm., gals.	25,400	2,080
Ag. imp. pkgs	43	4,661
Clocks, pkgs..	8	165
Sew. ma., cs..	20	376
H'r'shoes, kgs	50	170
Peru.		
Hdw., cs......	93	304
Pumps........	2	1,200
China.		
Mf iron pkgs	29	660
Hdw., cs......	6	289
Ptlm., gals.	473,050	45,831
Nails, kegs....	100	325
Mach'y, pkgs.	8	732

IMPORTS

Of Hardware, Iron, Steel and Metals into the Port of New York, for the Week ending Aug. 22, 1883.

Hardware.

Boker Hermann & Co.
Hdw., cutlery and guns, pkgs., 312
Ironware, cs., 24
Clark Mile End Cotton Co.
Mach'y, cs., 6
Contanseau L. & Co.
Mach'y, pkgs, 17
Delamater C. H.
Mdse., pkgs., 2
Degrauw, Aymar & Co.
Chain, lengths, 6
Field Alfred & Co.
Mdse., cs., 8
Chains, cks., 3
Wire, case, 1
Cases, 3
Packages, 4
Godfrey Chas F.
Arms, cs., 9
Graef Cutlery Co.
Cases, 7
Great Western Disp. Co.
Sewing machines, cs., 19
Hartley & Graham,
Arms, cs., 15
Hoe R. & Co.
Tricycle, 1
Hunting J. M.
Mach'y, cs., 5
Katz & Barnett,
Cases, 2
Leaycraft & Co.
Beam scale, 1
Lamarche H. & Sons,
Mdse., bales, 10
Ladenberg, Thalmann & Co.
Mach'y, pkgs., 3
Lowe & Roberts,
Guns, case, 1
Merch. Disp. Co.
Chains, cks., 16
Arms, cs., 2
Mach'y, cs., 7
Moore's Sons J. P.
Arms, cs., 30
Morris L. W.
Mach'y, cs., 2
Prosser Thos. & Sons,
Guns, cs., 4
Ritzmann C. L.
Guns, case, 1
Scott W. P.
Arms., cs., 6
Schoverling, Daly & Gales,
Mdse., cs., 50
Smith & Vanderbeek,
Mach'y. cs., 3
Vom Cleff & Co.
Mdse., pkgs., 12
Wiebusch, Hilger & Co.
Hdw., cutlery and guns, pkgs., 8
Anvils, 300
Chains, cks., 68
Witte John G. & Bro.
Cutlery, cs., 13
Arms, cs., 39
Order,
Guns, cs., 2
Ironware, cs., 8
Anvils, pkgs., 245
Cases, 4
Box, 1
Cutlery, case, 1

Iron.

Baring Bros. & Co.
Wire rods, bdls, 2707
Bars, 14,912
Brown Bros. & Co.
Coils, 162
Ore, tons, 200
Crocker Bros.
Pig, tons, 1000
Crooks Robert & Co.
Pig, tons, 100
Elliott, Sons & Co.
Ore, kg, 800,000
Ore, tons, 2610
Ironclad Mfg. Co.
Sheet iron, bdls., 740
Lang W. Bailey & Co.
Bundles, 10
Bars, 330
Lee Jas. & Co.
Pig, tons, 100
McComb J. J.
Cotton ties, bdls., 2200
Meyer G. A. & E.
Oxide, bbls., 10
Meissner, Ackermann & Co.
Rivet rods, coils, 211
Naylor & Co.
Spiegeleisen, cks., 703
Stetson G. W. & Co.
Pig, tons, 200
Williamson Jas. & Co.
Pig, tons, 300
Woltman & Mickerts,
Wire rods, bdls., 604
Order,
Pig, tons, 890
Rails, 54
Scrap, tons, 200
Rods, bdls., 65
Rods, pkgs, 3096
Oxide, bbls., 7
Wire rods, bdls., 4179
Old wrought shoes, lot
Bars, 16 700
Ore, tons, 945
Bundles, 847
Spiegel, tons, 206
Coiled rods, bdls., 2684
Plates, 10
Old tubes, tons, 25
Wire, coils, 348

Steel.

Abbott Jere & Co.
Cases, 14
Baring Bros. & Co.
Wire rods, coils, 7672
Downing, Sheldon & Co.
Bundles, 130
Ladenburg, Thalmann & Co.
Cases, 32
Lazard Bros.
Bars, 451
Levy J. S.
Packages and pieces, 13
Mayer, Strouse & Co.
Casks, 26
Moss F. W.
Bundles, 89
Bars, 22
Plock & Co.
Car wheels, 91
Seligman J. & W. & Co.
Rails, 1000
Wagner W. F.
Bundles, 557
Cases, 16
Bars, 261
Order,
Rails, 647
Wire, pkgs, 390
Gal. wire, cask, 1
Packages, 40
Forgings, 40
Flat steel, bdls., 22
Bess. bars, 150
Steelware, cs., 9
Bands, 160
Plates, cs., 2
Bars, 12

Metals.

Bank of Montreal,
Tin, bxs., 70
Baring Bros. & Co.
Tin, bxs., 245
Blake Bros & Co.
Plumbago, bbls., 716
Brantberg R. E.
Old brass, lbs., 420
Bruce & Cook,
Tin plates, bxs., 685
Bond & Parsons,
Tin plates, bxs., 1700
Brown Bros. & Co.
Plumbago, bales, 296
Cort N. L. & Co.
Tin plates, bxs., 2100
Dickerson, Van Dusen & Co.
Tin, bxs, 4082
Field Alfred & Co.
Gun caps, cs., 5
Cartridge cases, case, 1
Globe Express,
Stereo. plts, bxs, 9
Gurnier & Co.
Tin, bxs., 10
Gt. Western Disp. Co
Gun caps, cs., 20
Huermann W.
Antimony, cs., 32
Katz Bros.
Tin, slabs, 3905
Lamarche H. & Sons.
Rolled zinc, cs., 52
Lough & Van Romondt,
Copper cylinders, 2
Meyer G. A. & E.
Zinc oxide, cks., 200
Moore's J. P. Sons,
Cartridge cases, cs., 3
Nash C. F.
Old copper, bdls., 1000
New Haven Clock Co.
Mdse., cs., 12
N. Y. L. E. & Western Disp.
Tin bxs., 382
Phelps, Dodge & Co.
Tin plates, bxs., 4143
Black taggers, 217
Page D. S.
Tin plates, bxs., 403
Plock & Co.
Tin, ingots, 1114
Simmons H. E. & Co.
Type, bxs., 15
Stevenson, Pierson & Co.
Yellow metal sheathing, cs., 170
Winter & Smillie,
Tin ingots, 1172
Order,
Tin plates, bxs., 11,856
Lead, pcs., 792
Tin, slabs, 8223
Plumbago, bales, 300
Plumbago, bdls., 17[illegible]
Tin plates and taggers, bxs., 689
Tin sheets, cs., 56
Tin, ingots, 1171

PHILADELPHIA.

Office of *The Iron Age*, 220 South Fourth St., PHILADELPHIA, Aug. 21, 1883

Pig Iron.—The market shows no change, prices being steady under a very moderate demand. The outlook seems to be almost as uncertain as before, there having been no developments likely to affect values either one way or another. The reduction in the output ought to be felt pretty soon, and unless consumption has fallen off to a more serious extent than supposed, there is no doubt that it will be felt before long. Stocks of one kind or another are heavier than usual, but there is no superabundance of such brands as are generally called for, the accumulation consisting almost entirely of low or No. 2 grades. During the past week there has been no appreciable change in values, and, so far as regards No. 1 Foundry, the market may be quoted steady to firm. The offerings are unusually light, and as a large proportion of the current output is already under contract, it is difficult to see why prices should not be maintained. With a consumption equal to that during the first half of the year, it is not unlikely that there may be renewed indications of scarcity; but the outlook is too uncertain to warrant any very confident predictions on either side. Sales have been made during the week at prices ranging from $21.50 to $23, delivered chiefly in carload lots, or from that up to 200 tons. No. 2 Iron is relatively in large supply, prices weak and irregular, with sales at quotations ranging from $19 to $21, delivered, according to brand. A similar report must be made in regard to Mill Irons, which are a shade easier than they were a week ago and somewhat more difficult to sell. Choice brands still command $18 @ $19 at furnace, but standard brands have been offered at $17.50, at furnace, for 500-ton lots, without finding buyers. While there is no reason to suppose that good Irons can be had at less than $17.50 it is evident that the

supply is fully equal to requirements, and, as a consequence, prices are barely steady. It is difficult to secure bids for large lots at present, buyers having no uneasiness as regards the future. There is a good deal of uncertainty in regard to what their own requirements are going to be, and until this is more clearly understood it is impossible to do more than a hand-to-mouth business. This, in the meantime, absorbs supplies to an extent which enables sellers to maintain prices as already quoted, anything above or below these figures being an exception to the general market.

Bessemer Pig.—Sales of 5000 tons for shipment to New York have been made at a fraction less than $21, at which sellers are still offering moderate quantities. Buyers are very slow to respond to these figures, however, and the market may be called dull at $21, asked.

Spiegeleisen.—There is still a fair inquiry for all the various grades, with $26 asked for 10% to 12%; sales two lots of 1000 tons each at $25.50 and $25.75, respectively; 20% is offered at $31, without attracting business.

Blooms.—Market quiet; sales in small lots at the following quotations, viz.: Charcoal Blooms, $57 @ $58; Run-out Anthracite, $47.50 @ $49; Scrap Blooms, $42 @ $44; Northern Ore Blooms, $39.50 @ $41.50.

Muck Bars.—There is an increasing number of inquiries, some for good-sized lots, but only a small business has been done at $34 at mill, buyers of large lots expecting to place their orders at $33 @ $33.50.

Bar Iron.—The general position is unchanged; market quiet, with fairly steady prices. Quotations depend a good deal on the size of the order and time for delivery, but ordinarily 2.2¢ is named for the general run of business. Manufacturers appear to be very well employed, and prompt deliveries are somewhat difficult to obtain. There is a general complaint of the unprofitable character of business at present prices, but it is difficult to see how things can be improved. New orders are competed for with unusual keenness, so that prices are kept down to a point which leaves little more than first cost to the manufacturer, if that. Still, the trade are hopeful of improvement, and think that if a few good-sized orders are entered it will enable them to stiffen prices on the balance of their trade. There is some inquiry for Skelp Iron, for which 2.15¢ @ 2.2¢ is asked, with prospects of business at the lower figure. Bars have been sold at from 2.1¢ to 2.2¢, the latter being the usual quotation for the best Refined Iron. At the usual monthly meeting of manufacturers, held in this city yesterday, it was agreed to continue the card rate at 2.3¢ as a basis for labor.

Plate and Tank Iron.—The Plate mills continue fully occupied on orders entered previous to date, and there appears to be considerable difficulty in placing orders for very prompt deliveries. The amount of new business closed during the week cannot be called large, but with the work already booked the mills will probably have sufficient to keep them fully employed through the next 30 days or so. Prices rule steady and unchanged, but for deliveries beyond, say, September, it is not improbable that current quotations would be shaded some what if new business was likely to result therefrom. The demand for Tank Iron continues quiet. We repeat last week's quotations, viz.: Tank Iron, 2.5¢; Boat Plate, 2.35¢ @ 2.4¢; Shell, 3¢ @ 3.25¢; Flange, 4¢ @ 4.25¢, and Fire-Box, 5¢ @ 5.5¢.

Structural Iron.—The main features of this department have undergone no change, and nothing calling for special mention has been transacted since our last writing. Manufacturers appear to be satisfied with the general condition of the market and the amount of work on hand, which keeps them well employed. The outlook is considered encouraging, and indications point to a good, healthy fall trade. Prices rule about as follows: Angles, 2.3¢ @ 2.4¢; Bridge Plates, 2.4¢ @ 2.5¢; Tees, 3¢, and Beams and Channels, 3.5¢.

Sheet Iron.—Thin Sheets continue as reported during the past two weeks, viz., very active. Other descriptions are not in more than moderate demand. Prospects, however, for the balance of the year are said to be very satisfactory, and the demand for all sizes is likely to absorb the output. For ordinary-sized lots the following figures may be quoted:

Common Sheets, No. 28	4¼¢
Common Sheets, Nos. 26 and 27	4¼¢
Common Sheets, Nos. 21 to 25	4 ¢
Common Sheets, Nos. 18 to 20	3¾¢
Best Refined, ¼ % advance on the above.	
Best Bloom Sheets, Nos. 26 to 28	6¾¢
Best Bloom Sheets, Nos. 22 to 25	6½¢
Best Bloom Sheets, Nos. 16 to 21	6¾¢
Common Red Plates, 3-16 to 16	3.2¢
Best Bloom, Galvanized, discount	45 %
Second quality, discount	55 %

Wrought-Iron Pipe.—Business of an average amount has been transacted during the week, but, under strong competition, quotations have ruled irregular at about the following discounts: On Boiler Tubes 60 % off list price and on Gas and Steam Pipe 70 and 5 % off, with additional discounts, according to size and quantity required.

Steel Rails.—There are rumors afloat of large lots of Steel Rails having been sold; particulars, however, are not mentioned, but it is supposed the sales have been made at very low figures. With the exception of these rumors, the market presents much the same appearance as noted for several weeks previous. There appears to be little doing in a large way for winter deliveries, as manufacturers show an unwillingness to enter orders at figures named by large consumers, which are about $2 less than current quotations. Lots for prompt delivery, where this can be taken, are quoted firmly, from $38 to $38.50.

Old Rails.—The general features of the market remain unchanged, there still being an entire scarcity of spot lots, and the amount of business closed has been very trifling. Shipments are offered at $23 @ $23.50 for Tees, but buyers appear unwilling to pay these prices, unless for spot lots. A lot of about 500 tons Double Heads is offered for shipment at $25.50, and a similar lot of Old Bridge Rails at $25.

Scrap Iron.—There is little or no movement to note under this head. Sellers appear almost indifferent about doing business at figures named by consumers, who still confine themselves to purchasing in very limited quantities. Prime No. 1 Wrought is quoted $24 @ $25, firm, and cargo lots at, say, $22.50. Old Fish Plates are offered for shipment at $27.25.

Nails.—Demand appears to be about equal to production, and there is no accumulation of stocks. Small sizes are reported very scarce. In ordinary transactions $3 is the ruling price.

PITTSBURGH.

Office of *The Iron Age*, 77 Fourth Avenue, } PITTSBURGH, PA., Aug. 21, 1883. }

The general situation remains unchanged. Business is fair and slowly, but steadily, improving, although, in view of the recent numerous failures in different parts of the country, the feeling is not as confident as it was a few weeks ago. The financial troubles of Graff, Bennett & Co. and the Grafton Iron Co. have been cleared up, and some of the mills of Graff, Bennett & Co. are already in operation, and the others will follow as soon as repairs are completed and business justifies it. The many friends of this firm throughout the country will be glad to learn that they are once more on their feet and with a good prospect ahead. The Manchester Iron Co., it is understood, will continue to keep their furnaces in blast until they use up what Ore they have on hand, which, it is said, will last until December. General Cass was here last week from New York, making an effort to get the affairs of the company into better shape.

The great event of the week is the commencement of business by the Pittsburgh, McKeesport and Youghiogheny Railroad Co. This new road gives the Connellsville Coke region another outlet, and large shipments both east and west will be made by it. The new road and the Pittsburgh and Lake Erie are one and the same, being under the same management, and will be of great advantage to the Coke region and to Pittsburgh.

Ores.—There is nothing important to note, excepting a report that Bessemer Ores have been reduced 50¢ ℔ ton, which would make the price $7 @ $7.50 ℔ ton on the dock at Cleveland. This has been an exceedingly hard year thus far on the Ore companies, and while it is hoped that there will be an improvement before the year runs out, the prospect is not very encouraging, in view of the large number of idle Pig-Iron furnaces.

Manufactured Iron.—Some of our manufacturers report an improved demand, while others can see little or no improvement; all agree, however, that prices are unsatisfactory—that is, for ordinary Merchant Iron. For specialties, the demand for which is steadily increasing every year, there is not so much competition, and makers are able to obtain more remunerative rates. It is claimed that there is no money in Bars at present prices, and some of the mills are paying more attention to specialties and less to Merchant Iron, for the reason noted. Prices are still quoted upon a basis of 1.9¢ @ 2¢ for Bars, 60 days, 2 % off for cash—that is, for assorted orders. Those mills making a specialty of Bridge and Structural Iron are pretty well supplied with orders, and there is a fairly active business in Sheet and Plate Iron; one mill here is reported as having secured an order for 750 tons of Plate Iron within the past few days.

Pig Iron.—There has been no material change during the past week, with the exception of a slight falling off in demand, though possibly the tone of the market is scarcely as confident as it was two or three weeks ago. However, business keeps up pretty well, and, as the mills are nearly all in operation again, the consumption is large and increasing, and the general impression is that there will be a steady consumptive demand from now on until the close of the year. We repeat last week's quotations as follows:

No. 1 Foundry	$21.00 @ $22.00,	4 mos.
No. 2 "	19.00 @ 20.00,	4 "
Neutral Gray Forge	17.50 @ 18.50,	4 "
All-Ore Gray Forge	19.00 @ 20.00,	4 "
Warm-Blast Charcoal	25.00 @ 27.00,	4 "
Cold-Blast "	28.00 @ 33.00,	4 "
Bessemer Iron	21.00 @ 21.50,	4 "

Included in the sales were 200 tons All-Ore Forge at $19, cash; 100 tons do., $19, 4 mos.; some 2500 tons Neutral Forge at $18, 4 mos.; 200 do. at $18.50, 4 mos.; 200 tons (native ore) Forge at $17.50, cash; 100 tons do., $17.50, 4 mos.; 100 tons Silvery at $18.50, cash. Small sales of Bessemer, for foundry use, at $21.50, 4 mos.; the last large blocks were sold at $20.50, cash, and $21, 4 mos., which may be regarded as the ruling rate for large lots.

Nails.—The demand is only fair; some of the large jobbers West and South appear to be impressed with the belief that present prices cannot be much longer maintained, and they order only as their immediate wants necessitate. Manufacturers, however, in view of the very limited supply, both in first and second hands, are pretty confident of being able to hold prices where they are, and if it should appear at the next monthly meeting of the association that the supply in first hands has commenced to accumulate, another shut-down will no doubt be ordered. We repeat former quotations—$3 ℔ keg, 60 days, 2 % off for cash, with usual abatement of 10¢ ℔ keg on carload lots and upward.

Wrought-Iron Pipe.—There is a fair business, but no improvement in prices, which to makers are unsatisfactory. Discounts in Gas and Steam Pipe are still quoted at 70 and 10 % on small, and 75 % on large sizes. Oil-Well Casing, 43¢ @ 45¢ ℔ foot, net; do. Tubing, 14 @ 15¢.

Old Rails.—Prices are still quotable at $23 @ $23.50 for American Tees. There are buyers here at former quotations, and, from all that your correspondent can learn, but few offering at any price. The feeling prevails, however, that the stock in the country is considerably larger than the railroads—the chief sellers—are willing to admit, and that the market may break later on in the season. There have been more buyers here of late than for some time past, and to this may be attributed, in part, the stiffness that has characterized the market for some time past.

Steel Rails.—The market is reported steady at $35 @ $39, cash, at mill, for near-by delivery; late fall and winter delivery, for which the inquiry is rather light, might be bought far below our inside quotations.

Railway Track Supplies.—There is a fair demand, but no change in prices. Railway Spikes, 2.6¢, 30 days; Splice Bars, 1.9¢ @ 2¢; Track Bolts, 3¢ with square and 3.2¢ @ 3.25¢ with hexagon nuts.

Crop Ends.—There have been no sales reported here for several months, and consumers appear to have all they want. A good many consumers, owing to the increased duty that went into effect July 1, anticipated future wants during May and June, in expectation that the increased duty would put up prices, but thus far these expectations have not been realized, and some of those who anticipated future wants have begun to think that they made a mistake. The indications now are that the effect of the increased duty here will be to put prices down on the other side of the water.

Bessemer Billets—Are quoted at from $38 to $42, according to carbon, with a very fair demand.

Scrap.—The demand for all kinds of Scrap continues light, and dealers report that there is scarcely enough doing to establish prices. No. 1 Wrought is nominal at $21 @ $22, net ton, for Ordinary, and $23 @ $24 for Selected Railway; Old Car Axles, $32 @ $33; Old Car Wheels, nominal at $20 @ $21, gross. Cast Borings, $13 @ $14, gross.

Coke.—There has been a considerably increased business within the past few weeks; the shipments out of the Connellsville region are increasing steadily, and, though prices remain unchanged, the tone of the market is firmer. As stated elsewhere, the opening of the Pittsburgh, McKeesport and Youghiogheny Railroad will be of vast importance to the Coke trade. We repeat former quotations, 90¢ ℔ ton, free on cars at ovens.

Window Glass.—Discounts are still quoted at 70 % on single and 70 and 10 % on double strength, in carload lots.

CHICAGO.

EVERETT & POST, 156 Lake street, Chicago, report to us as follows, under date of August 18, 1883: *Pig Lead.*—The past week has developed nothing of interest in Pig Lead There is a feeling that the bottom has been reached, although the trade still continues to be for immediate consumption only. Prices nominally $4.03 @ $4.05 for Common and Refined. *Connellsville Foundry Coke* remains about the same as last week. The demand is good. Prime Foundry Coke is selling at $5.15 ℔ ton, f.o.b. Chicago. Crushed Coke, all sizes, is also in good demand; price nominally $6, f.o.b. Chicago.

CHATTANOOGA.

Office of *The Iron Age*, Market and 8th Sts., } CHATTANOOGA, Aug. 20, 1883. }

There are no special changes to note in the business of this section. Rains have continued since the last report, and fall crops and late summer crops are doing very well. Preparations go forward for enlarging old and opening new manufactories—with less vigor, perhaps, than a year ago, but on generally more solid bases. Two new furnaces have been blown in during the summer, and two more will be blown in within two months. Several stacks that blew out in the spring are about ready to go in. These and other building and new manufacturing enterprises have served to absorb labor thrown out by closings, &c., and their business has run, upon the whole, quite smoothly during the warm season. The weather has been cool for the season during the past week.

Pig Iron.—Sales are rather better than they have been in past weeks. Rates are the same, with a stiffening tendency. Holders decline to accept orders for fall delivery at present quotations. Transactions are generally at quoted rates, except for the lowest grades. We quote No. 1 Foundry, $19 @ $20; No. 2 Foundry, $18 @ $19; Gray Forge, $16 @ $19; White and Mottled, $14 @ $15; Car-wheel Metal, $24 @ $26.

Ores.—We quote 50 % Brown Hematite, ℔ ton. $2 @ $2.75; Red Fossil, $2 @ $2.25, delivered at furnace.

Miscellaneous Articles.—Old Rails are fairly steady at $22. We quote Wrought Scrap, $18 @ $22; Cast Scrap, $11 @ $14; Old Wheels, nominal, $22.

Nails.—Prices are fairly steady at $3. Stocks are in better shape than they were two weeks ago There is no pressure to sell, and prospects are prices will hold up during the autumn; $3, 60 days, 2 % off for cash—job lots about 15¢ higher—is a fair quotation.

Manufactured Iron.—The Bar Iron market continues in fair shape at $2 @ $2.10; Railroad Spikes, $2.60; Track Bolts, $3.20; Fish Plate, $2. Track Supplies are in good demand and strong at quotations.

Coal.—We quote Fancy Lump, $3; Common, $2.50; run of mine to manufacturers, $1.75 at mills.

Coke.—We quote Furnace Coke, $3 at point of consumption; Foundry, 10¢ @ 12¢ ℔ bushel.

LOUISVILLE.

GEO. H. HULL & Co., Commission Merchants, report as follows, under date of Aug. 18, 1883: The market is quiet, but the volume of sales of Hot-blast Iron continues satisfactory, though prices are low. We quote, for cash, in round lots, as below:

FOUNDRY IRONS.

No. 1 Hanging Rock Charcoal	$25.00 @ 25.50
No. 1 Southern Charcoal	22.50 @ 23.00
No. 1 Hanging Rock Stonecoal and Coke	20.50 @ 22.50
No. 1 Southern Stonecoal and Coke	20.00 @ 20.50
No. 2 " " "	18.50 @ 19.50
"American Scotch"	19.00 @ 21.00
Open Silver-gray	18.00 @ 19.00
Close "	17.00 @ 18.00

MILL IRONS.

No. 1 Charcoal	19.00 @ 20.00
No. 1 Stonecoal and Coke, Neutral	18.00 @ 18.50
No. 2 " " "	17.00 @ 17.50
No. 1 " " Cold-short	17.00 @ 17.50
No. 2 " " "	16.50 @ 17.00
White and Mottled, Cold-short and Neutral	15.00 @ 16.00

CAR WHEEL IRONS.

Hanging Rock, Cold-blast	30.00 @ 34.00
" Warm-blast	23.00 @ 24.00
Alabama and Georgia, Warm and Cold-blast	27.00 @ 28.00
Central Kentucky, Cold-blast	27.00 @ 28.00

W. B. BELKNAP & Co., Iron and Steel Merchants, Nos. 115 to 121 West Main street, report to us as follows, under date of August 18: *Bar Iron* has been much more active during the past fortnight. Inquiries for large lots are afloat, and there is no talk of further decline. Mills are well filled up with orders for immediate delivery, and are not anxious to contract for future at the present inside figures. Demand from the South and Southwest is particularly good. *Hoop Iron* is dull, but such band sizes as are called for by the wagon-makers are in good request. *Sheet Iron.*—The heavy gauges are firm. It is impossible to obtain concessions from good mills on the ruling rates. Light gauges are still in rather excessive supply, and the price has not risen above its lowest ebb. *Steel.*—The best grades of Cast Steel are moving fairly, denoting more or less work at the mines and on the railroads. Plow Steel is being taken under contract for the coming season by our large factories here. Prices are a little lower than last year, but there is no demoralization apparent in the article. The outlook for its generous consumption is good. *Wire.*—Plain Wire has touched bottom, if we may judge from the reports that are current. Galvanized bears somewhat better profit yet. The season for Barb Wire is opening up with free demand, though prices are so badly cut it is hard to say just where bottom is. General Hardware is on the improve. Advances on Files, Cartridges, Hoes, Steel and wood goods generally have a solidity to them not often witnessed in the efforts of combinations. It seems to be a movement begotten of determination to prevent, if possible, recurrence of last season's ruinous cutting. Wagon material is in heavy demand. Crops in this part of the country are good. The business, both freight and passenger, of the railroads centering here—viz., Louisville and Nashville; Chesapeake and Ohio; Louisville, New Albany and Chicago—is most satisfactory in its volume, being far in excess of previous years. However Wall street may gauge the situation, it seems sound enough here. The elements of prosperity are everywhere apparent, and the future is full of encouragement. The exposition, now in full operation, has developed into a magnificent display, and is doing much to render the city attractive to fall visitors.

CINCINNATI.

AUGUST 20, 1883.—*Pig Iron.*—Transactions in the past week have been characterized by increased volume of trade and firm prices in all the better grades. The middle and lower kinds are in excess of wants and are pressing the market. The Silver-gray Softeners are sought for and the demand is in excess of immediate supply of best grades, but contracts will be made for future delivery at present quotations. Forge Irons are in excess of wants, and holders prefer to wait rather than accept speculative offers Best No. 1 Hanging Rock Charcoal Foundry, $24.50 @ $25; Good, $24 @ $24.50; Southern Charcoal Foundry, $20 @ 22; Best Hanging Rock Coke, $22; Good, $21.50; Southern Coke, $19 @ $20 for No. 1; No. 2, $18.50; American Scotch, Best, $21.50 @ $22; Good, No. 1, $21; No. 2, $20. Silver-gray Softeners, Best, No. 1, $20 @ $20.50; Good, No. 1, $20; No. 2, $19.50; No. 3, $18.50; Forge, $17 @ $22.50, including all grades from Stonecoal, Coke and Charcoal. Car-wheel—Hanging Rock Cold Blast Charcoal, $30; Georgia, $28; Alabama Warm Blast Charcoal, $26 @ $27; Hanging Rock, $25 @ $26. Scrap—Rails, 1¢; Car-wheels, $20.50 ℔ ton; Wrought, 70¢ @ $1 ℔ 100 ℔: Cast, 50¢ @ 70¢.

BALTIMORE.

W. N. WYETH, Iron and Steel Merchant, 46 and 48 South Charles street, reports us the following, under date of Aug. 20, 1883: We have to report a fair average trade doing for the past week, with very close margins, as per annexed figures:

Ref. Bar Iron, 1 to 6 x ½ to 1	℔	2¼ @	2.3¢
" " 1 to 4½ x 1½ to 1	℔	2¼ @	2.35¢
" " ¾ to 2, Round and Square	℔	2¼ @	2.35¢
Hoop Iron, 1½ wide and upward	"	3 2-10 @	3 3-10¢
Band Iron, from 1½ to 6 in. wide	"	2 7-10 @	2 8-10¢
Horse-shoe Iron	"	3¼ @	3½¢
Norway Nail Rods	"	5¼ @	5½¢
Black Diamond Cast Steel	"	11 @	12 ¢
Machinery Steel	"	4½ @	5 ¢
Spring Steel	"	4 @	4¼¢
Common Horse Nails	"	10 @	11 ¢
Railroad Spikes, 5½ x 9-16	"	2 6-10 @	2 7-10¢
Perkins' Horse Shoes, ℔ keg of 100 ℔			$4 37½
" Mule Shoes			5 37½

R. C. HOFFMAN & Co., Pig and Railroad Iron Merchants, No. 21 South Frederick street, writes as follows, under date of Aug. 20, 1883: There is but little doing in the Iron market. Sales light, and prices without material change. We quote as follows:

Baltimore Charcoal Wheel Iron (all Baltimore Ore)	$28.00 @ 30.00
Virginia C. B. Wheel Iron	28.00 @ 30.00
Anthracite, No. 1	22.00 @ 24.00
" No. 2	20.00 @ 22.00
" No. 3	17.00 @ 19.00
" Mottled and White	15.00 @ 16.00
Charcoal C. B. Blooms	50.00 @ 57.00
Refined Blooms	40.00 @ 45.00

ST. LOUIS.

HOFFER & Co., Pig Iron and Iron Ore Merchants, 214 Pine street, report to us as follows, under date of August 18, 1883: The condition of this market remains dull and without interest. We continue quotations:

HOT BLAST CHARCOAL IRONS

Missouri	$20.00 @ 20.50
Southern	20.00 @ 21.00
Ohio	25.00 @ 26.00

COAL AND COKE IRONS.

Missouri	20.00 @ 20.50
Southern	18.50 @ 20.00
Ohio	20.00 @ 25.00

MILL IRONS.

Red Short	18.50 @ 20.00
Neutral	17.00 @ 18.00

CAR WHEEL AND MALLEABLE IRONS.

Missouri	21.00 @ 22.00
Southern	25.00 @ 28.00
Ohio	29.00 @ 32.00

RICHMOND.

ASA SNYDER, Iron Merchant and Furnace Agent, writes as follows, under date of August 20, 1883: The business of the past week has shown a marked improvement, due chiefly to the exhaustion of stock in the yards of consumers. Orders are generally for small lots. Prices are as follows, and may be shaded a little on large orders:

No. 1 Scotch Pig Iron	$21.00 @ 26.50
No. 1 Anthracite Pig Iron	21.00 @ 23.50
No. 2 " "	20.00 @ 22.00
No. 1 Virginia Coke Pig Iron	20.00 @ 22.50
No. 2 " "	19.50 @ 21.00
No. 3 " "	18.00 @ 19.00
White and Mottled	16.00 @ 17.00
Virginia C. B. Charcoal	26.00 @ 28.00
Old Dom. Nails (carload lots)	3.00 @
" Refined Bar Iron (base)	2 2-10¢
Old Iron Rails	21.00 @ 22.00
Wrought Scrap, No. 1	20.00 @ 21.00
Cast Scrap, No. 1	15.00 @ 18.00
Horse Shoes (Tredegar)	4.75 @
Mule " "	5.25 @

Our English Letter.

Review of the British Iron, Steel, Metal and Hardware Trades.

(*From Our Regular Correspondent.*)

LONDON, August 6, 1883.

THE WEEK

has again been uneventful in a business sense. We are supposed to feel relieved by the rejection of the Channel Tunnel and Suez Canal schemes, but, speaking soberly, I do not think the extinction of those ambitious projects has either added to or deducted from the sum total of our current commercial transactions. Stock Exchange authorities would, in a similar sense, have us believe that the earthquake in Italy and the cholera in Egypt have affected our fortunes. We know that the latter is minimizing our business with the Khedive's dominions, but we have no evidence that the convulsion at Ischia is of commercial importance, albeit we are well aware that the sulphur mines of Sicily are owned by Englishmen. Briefly, we are very much as we were when I last wrote, and as we seem likely to remain for some little time to come. We are doing a good deal of business in iron and steel, as in other commodities, but we are securing low prices, and only at those values can we continue to be well occupied. There is no probability of higher rates; hence all our calculations must be based upon existing conditions and values being maintained. The weather is really of more importance to us than anything else, and that is not of the best. Showers come along every day, and are doing harm where they fall heavily, but the southern counties are harvesting, and the reports speak of excellent crops of barley and oats. The northern counties will be much later, and may fare worse with those cereals, while the cutting of wheat will not be general for several weeks to come. The temperature has been up to an ordinary level since my last, so that ripening is going on, while the heat is not too great for the potatoes or for the other root crops, of which we have promise of an unusual abundance. On the whole, therefore, in this respect we are hopeful, and venture to anticipate a moderately good, even if not an exuberant, harvest. With fine weather we shall certainly do well, and all our trades would promptly benefit, as the country shopkeepers are known to carry very low stocks, which they will replenish directly they get in their outstanding accounts from the farmers. In London all reports are united in describing business as being very dull, which is also the case in the provinces, as a whole. The adjective will in all probability be applicable throughout this month, which is *par excellence* the English holiday period. To-day is one of our legal bank holidays, and is universally observed from one end of the country to the other. It signalizes the beginning of the tourist season proper, especially the migration of families, as all the schools end their "terms" within a few days of each other at the end of July, and the children of the metropolis and large towns are literally conveyed *en block* to the seaside resorts within the next few days. By general consent, August is regarded as being the worst month of the year for business in England.

THE IRON MARKET

may be termed quiet, but steady. The unsettled weather of the past two or three weeks has tended to repress the more sanguine operators, while the excellent shipments and the lessened political tension has naturally had due weight in an opposite direction. Other causes have been at work also, among them being the Staffordshire strike, and the broad result seems to be that matters are scarcely anything better than they were a month or so back. From the United States we have improved advices, but there is nothing bearing the most remote resemblance to a boom in that country, nor do present indications afford room for the supposition that we are likely to have any considerable demand thence during the present year. Continental reports speak of about an average state of trade, but there is no activity anywhere, nor is it deemed likely that the demand from our chief customers will expand beyond normal limits. Many of the Colonial markets are evidently overstocked with several kinds of iron, but the outlook in the Australian Colonies is fairly bright, and the same may be said of New Zealand. South Africa remains in an unsettled condition for various reasons, and failures continue to occur at Cape Town. From the East Indies a moderate call is experienced for English and Swedish iron, while the South American countries, as well as the West Indies, are fairly good buyers of foundry work and some kinds of merchant iron. From British North America the demand is about, but not above, the average of the season. On the whole, therefore, it would appear that we may expect a continuance of steady quietude, with little or no probability of any great change for the better, unless in the event of an unusually good harvest at home, or in the unlikely contingency of a sudden spurt in the United States. At Glasgow warrants have been a trifle better on the week, while makers' brands have been somewhat irregular. Some of the Scotch brands, indeed, have gained 6d. or 1/ ℔ ton, while others have lost to about the same extent. Shipments of Scotch pig are slightly above those of the same period of last year, and the total to date is

nearly 2000 tons ahead, while Connal's stocks are 49,000 tons less; yet warrants are 3/ ℔ ton lower than they were a year ago, and makers' brands are also cheaper. Stocks in makers' own yards are now unknown, whereas at midsummer, 1882, they were ascertained and published. The absence of a similar statement now no doubt has something to do with the lassitude of the market. Middlesboro' pigs are quiet and not strong in prices, No. 3 being offered by second holders at 39/ @ 39/3, although the ironmasters hold out for 39/6 @ 40/. The July shipments have been very large, especially to Scotland, which has taken 26,000 tons more this year than last. This increase seems to demonstrate that the creation of No. 4 brands of Scotch pig has done nothing in the way of checking the consumption of Cleveland pig in Scotland. The monthly returns of the Cleveland Ironmasters' Association may possibly strengthen values in the district, but there is no reason for assuming that the increase will be other than of very modest proportions. On the West Coast the previously-noted dullness of hematites has undergone no relief, both ores and pigs being quite stagnant. Ores are being stocked at the mines pending a revival, and pigs are being produced more freely than the consumptive demand requires. Mixed parcels of Nos. 1, 2 and 3 are called 49/ @ 49/6, at which low average they are slow of sale. In the Northern and Central Midlands crude irons are quiet and irregular, many arrangements having been upset by the strike. Deliveries are now being resumed, however, and the furnace banks relieved accordingly. Heavy manufactured iron is still in large output, especially armor, ship and boiler plates. The armor-plate concerns have work assured for two or three years to come, and the boiler-plate mills are well sold forward, but the future of ship plates is not so assured, and the manufacturers are rather anxious as to the final quarter of the year. At the same time, new orders of magnitude are in the market, and the mills are well engaged at the present time. Structural ironwork is in fair request, and there is plenty of work at the works devoted to dockyard requisites—chains, cables, anchors and the like. Fencing wire is not very lively, but the foreign competition is said to be less keen. The galvanizers are reported busy all round, but prices have not been stiffened, and there are no outward tokens of abnormal activity in the branch. Merchant irons are nominal on the basis of £7. 10/ for Staffordshire marked bars, and there is much uncertainty as to the near future, owing to the relations between the ironmasters and a section of the workmen. The ironmasters met at Birmingham on Tuesday, and decided to levy £1 per week for each puddling furnace in operation, the sum so raised to be distributed among those employers whose puddlers remain out. This course was adopted instead of a general lockout, which would undoubtedly have been a most inconvenient course of procedure. For sheets the demand is brisk, and there is a good call for hoops and strips. Iron rails are only asked for in specially light sections, at £6 and upward. Old rails are nominal, but in fair request for home use by the rolling mills, with a few sales on export account. Heavy wrought scrap is neglected, except some first-class assortments for the United States. Cast scrap is dull and unchanged. Freights are without particular changes, and, as a rule, are easy and nominal. Pig iron by ordinary steamers, Glasgow to New York, is still called 7/6 ℔ ton, at which engagements are now being entered into. Eastern rails are as last quoted. Steel is in tolerably good request, but there does not appear to be any pressure of orders, except at certain establishments where castings and special qualities of forgings, &c., are made. A few of the older Sheffield firms are steadily engaged on American account. The crucible-steel houses generally, however, find their best customers among the tool, cutlery and engineering concerns at home. For rolled Bessemer material there is a medium inquiry, but some of the producers are not so busy as they were before midsummer. There is no call for blooms, but crop ends meet with a ready sale, although some of the users are over stocked. All the Siemens-steel manufacturers are busy on special work or mild sheets, plates, &c. Old leaf-spring steel is in slow request for the States. Steel rails remain very dull, and there are few new commissions of moment in the market. Prices must be deemed open and quite nominal at £4. 15/ @ £5, the Welsh mills being firmest in their views. At present there is a sufficient amount of work in hand, and some of the concerns can see their way through the whole of the year, but the industry cannot be said to have a brilliant outlook.

SCOTCH PIG IRON

has been tolerably steady during the week, and warrants have gained a few pence ℔ ton upon the price named in my last. They are yet below the level of last year, however, being now 47/7 as against 50/10 @ 51/ a year ago. The shipments are good and stocks in the public stores are still decreasing, yet the market gains very little strength. There are now 125 furnaces (including 7 on hematites) in blast in Scotland, against 110 this date, 1882, while Connal's stores contain 584,043 tons, as compared with 632,635 tons same date last year. The total shipments reach 367,481 tons, or an increase of 1966 tons, of which 942 tons were contributed last week. Middlesboro' pig-iron imports into Scotland this year have been 154,594 tons, or 26,454 tons above those of 1882 the same date. Writing from Glasgow on Aug. 3d, James Watson & Co. said: "The Scotch iron market has been somewhat firmer this week, due, in a great measure, to speculative buying by those connected with the trade. There is a fair demand for shipping iron, prices of which continue steady. The Middlesboro' market is dull and quotations are unchanged. The warrent market on Monday last was firm, the price advancing from 47/5½ to 47/8, closing, however, at the former figure. On Tuesday a limited business was done between 47/8½ and 47/6, cash, while on Wednesday the price receded to 47/4½, closing at 47/5 ℔ ton. Yesterday the market advanced to 47/7, closing sellers thereat. To-day the price further improved to 47/8, closing weaker at 47/6½, buyers over, sellers 47/7 ℔ ton. The shipments last week were 14,058 tons, as compared with 13,116 tons, for the corresponding week of last year." We quote:

	No. 1.	No. 3.
G. M. B., at Glasgow	48/6	46/6
Clyde, "	50/6	48/6
Coltness, "	60/6	53/
Langloan, "	60/	53/6
Gartsherrie, "	57/	53/
Summerlee, "	57/	51/
Calder, "	57/6	52/6
Carnbroe, "	55/6	49/6
Glengarnock, at Ardrossan	55/6	48/
Eglinton, "	49/	45/6
Dalmellington, "	49/6	48/6
Shotts, at Leith	59/6	55/
Kinneil, at Bo'ness	49/6	47/6
Carron, at Grangemouth	49/	47/6

MIDDLESBORO' PIG IRON

enjoys a very satisfactory demand for local consumption and the shipments are extremely large, but values remain very quiet, and there is no indication of any enhancement. No. 3 is held by makers at 39/6 @ 40/, but merchants are selling at 39/3, or, in some instances, at 39/. For G.M.B., f.o.b. at makers' wharves in the Tees, net cash, less 2½ %, quotations are:

No. 1 Foundry	43/3	Mottled	37/9
" 2 "	41/3	White	37/3
" 3 "	39/3	Refined Metal	55/
" 4 "	38/9	Kentledge	40/
" 4 Forge	38/3	Cinder	34/

As I write I have a brief telegram imforming me that stocks decreased by 4000 tons only during July—a much smaller decrease than had been anticipated.

WEST COAST HEMATITES

are still quiet and dull, with a total production which is in excess of the consumptive wants of the market. Mixed numbers are nominal at 49/ @ 50/, and are in poor request, albeit good shipments are reported. Makers' brands are priced as below for ordinary lots, large parcels being obtainable at rather less money.

	No. 1.	No. 2.	No. 3.
Cleator	55/	54/	53/
Lonsdale	51/	50/6	50/
Workington	51/	50/6	50/
Lowther	51/	50/6	50/
Distington	52/	50/6	50/
Harrington	51/	50/6	50/
Solway	51/	50/6	50/
Maryport	51/	50/6	50/

There are 53 furnaces at work in the district, whence last week's shipments amounted to 14,600 tons pig iron and 4594 tons of steel rails. Ores are 9/ @ 11/6 ℔ ton at the mines, and are being freely stocked, while Spanish is 14/6 @ 15, ex ship.

COPPER REPORT.

The subjoined remarks are by Harrington, Horan & Co., Liverpool, under date July 31: Chili copper charters for first half of July were advised on 16th inst. as 1800 tons fine, all bars and ingots, of which 400 tons for England and 1400 tons for Continent. Price of bars was $17.77½, and exchange 35¾d. To-day charters for second half of July are advised as 2000 tons fine. Since our last report a moderate business has been done in Chili bars at £63. 12/6 @ £64. 2/6 ℔ ton for cash parcels, and at £64. 5/ @ £64. 10/ for good ordinary brands, three months, prompt. There is a slightly improved demand for yellow metal and for some descriptions of English manufactured copper, but the market for Chili kinds is dull to-day at our quotations. The sales of furnace material comprise: At Liverpool, 60 tons Canadian regulus, to arrive, at 12/7½; 40 tons Lisbon ore at 12/3; 86 tons Italian ore, to arrive, at 12/3, and 100 tons American ore, to arrive, at 12/4½ ℔ unit. At Swansea, 370 tons Norwegian ore, to arrive, at 12/1½, and 1000 tons Cape ore at 12/6 ℔ unit. Precipitate, 175 tons English at 13/; 225 tons Rio Tinto at 13/, and 71 tons Mason's Spanish (high produce) at 12/10½ ℔ unit. Import of Chili copper during the past fortnight, 830 tons fine, against 627 tons fine same time last year; delivery, 940 tons, against 1332; import of other copper during the past fortnight, 1249 tons fine, against 1345; delivery, 1150 tons, against 1086. Quotations are: Chili bars, to-day, £63. 12/6 @ £64. 5/; 31st July, 1882, £63. 7/6 @ £69. 5/; 29th July, 1881, £58. 15/ @ £59. 15/; 30th July, 1880, £61. 5/ @ £62. Chili ingots, to-day, £68; 31st July, 1882, £73; 29th July, 1881, £66; 30th July, 1880, £67. Chili ore and regulus, to-day, 12/3 @ 12/9; 31st July, 1882, 13/9 @ 14/1½; 29th July, 1881, 11/9 @ 12/; 30th July, 1880, 12/ @ 12 6. Corocoro Barilla, to-day, 13/3; 31st July, 1882, 14/6; 29th July, 1881, 12/6.

Arrivals here during the fortnight of West Coast South America produce:

	Bars.	Ingots.
Arequipa, from Valparaiso	84	....
Arctique, s., from Valparaiso, &c.	100	30
Norseman, from Valparaiso	21	....
Castlehead, from Valparaiso	101	....
Sabrina, from Valparaiso	16	....
Patagonia, s., from Valparaiso, &c.	208	250

At Swansea—Nil.

Stocks of copper (Chilian and Bolivian) in first and second hands, likely to be available, we estimate at:

	Regulus.	Bars.	Ingots.
Liverpool	455	17,097	436
Swansea	3,573	6,970	...
Total	4,028	23,097	436

representing about 26,245 tons fine copper, against 26,355 tons 14th inst.; 23,793 tons July 31, 1882; 31,672 tons July 29, 1881; 32,148 tons July 30, 1880. Stock of copper contained in other foreign ore and Spanish precipitate, 4014 tons fine, against 2375 tons July 31, 1882; stock of Chili bars and ingots in Havre, 2149 tons fine, against 3227 tons July 31, 1882; stock of Corocoro Barilla in Havre, nil, tons fine, against 23 tons July 31, 1882; stock of copper other than Chili in Havre, 520 tons fine, against 370 tons July 31, 1882; stock of Chili copper afloat and chartered for to date, 13,239 tons fine, against 10,859 tons July 31, 1882; stock of foreign copper in London, chiefly Australian, 4600 tons fine, against 7800 tons July 31, 1882.

SOME CURRENT PRICES

are:

Best Drawn Iron Wire.—Terms 2½ % for cash.

B.W.G., Nos	0-6	7	8	9	10
Bright or annealed, ℔ cwt.	10/6	11/0	11/3	11/9	12/6
Galvanized, ℔ cwt	14/3	14/9	15/0	15/6	16/3
B.W.G., Nos	11	12	13	14	15
Bright or annealed, ℔ cwt.	13/0	13/6	14/0	14/6	15/3
Galvanized, ℔ cwt	16/9	17/3	17/9	18/3	20/0
B.W.G. Nos	16	17	18	19	20
Bright or annealed, ℔ cwt.	19/0	17/0	18/3	19/6	21/6
Galvanized, ℔ cwt	20/9	21/9	24/0	25/3	28/9
B.W.G., Nos	21	22	23	24	25
Bright or annealed, ℔ cwt.	21/3	25/0	27/9	28/0	29/6
Galvanized, ℔ cwt	31/0	33/9	35/6	39/3	43/3

Extras.

Charcoal, ℔ cwt	5/0
Tinned, ℔ cwt	8/6
Charcoal tinned, ℔ cwt	14/6
Charcoal, half-round, ℔ cwt	13/0
Coppered wire, ℔ cwt	1/3
Spring wire charcoal, ℔ cwt	6/0
Square wire, ℔ cwt	1/9
Cut to lengths, ℔ cwt	2/9
Wire in straight lengths, ℔ cwt	3/6
Drawn to pattern, ℔ cwt	0/5
Bessemer steel, ℔ cwt	4/6
Dudley Bagging, ℔ cwt	0/5
Cotton, ℔ cwt	0/3
Papering, ℔ cwt	0/2
Dressing, ℔ cwt	2/6

Wound in 1-℔ and ½-℔ banks, 2/9 ℔ cwt. Wound in ¼-℔ banks, 5/6 ℔ cwt. Wound in 1-oz. or 2-oz. banks, 1d ℔ ℔.

Small Round and Square Bar Iron.

Inch	½,7-10,¾,	11-32	5-16	5-32	¼
B. W. G.		1	2	3 & 4	
℔ ton	£6. 15/	£7. 0/	£7. 5/	£7. 10	£7. 15/
Inch	7-32	3-16			
B. W. G.	5	6	7	8	9
℔ ton	£8. 5/	£8. 15/	£10. 5/	£11. 15/	£13. 15/
Inch				⅛	1-10
B. W. G.			10	11	12
℔ Ton			£14. 5/	£15. 15/	£17. 5/

Best Rolled Fencing Wire.

No	4	5	6
Oiled ℔ ton	£7. 0/	£7. 10/	£8. 0/
Galvanized ℔ ton	£10. 10/	£11. 0/	£11. 10/

Best Drawn Fencing Wire, B.W.G., ℔ ton.

Annealed and Oiled.

0-6	7	8	9	10	11	12
£9	£9. 10/	£9. 15/	£10. 5/	£11. 5/	£11. 15/	£12. 5/

Prepared Bright.

0-6	7	8	9	10	11	12
£10	£10. 10/	£10. 15/	£11. 5/	£12	£12. 10/	£13

Galvanized.

0-6	7	8	9	10	11	12
£13	£13 10/	£13. 15/	£14. 10/	£15. 5/	£15. 15/	£16. 10/

Annealed or Bright Steel, Round or Oval.

0-6	7	8	9	10	11	12
£10. 15/	£11. 5/	£11. 10/	£12	£13	£13. 10/	£14

Best Drawn Killed Galvanized Telegraph Wire.

0-6	7	8	9	10	11	12
£14. 10/	£15. 10/	£15. 10/	£16. 5/	£17	£17. 10/	£18 10/

In long lengths of 1 cwt. each.

Annealed Tinned Bottling Wire.

B.W.G.—Nos	18	19	20	21	22	23
℔ 14 ℔	3/5	3/7	3/11	4/1	4/3	4/10
B.W.G.—Nos	24	25	26	27	28	
℔ 14 ℔	5/4	5/10	6/7	8/1	9/1	

Bottling wire, cut to lengths, 6d. ℔ 14 ℔ extra.

Best Galvanized Strand, Three-ply.

B.W.G.—Nos	0	1	2	3	4	5
Yards ℔ cwt	130	210	237	275	340	430
℔ cwt	15/3	15/6	16/3	16/9	17/0	17/3
B.W.G.—Nos	6	7	8	9	10	
Yards ℔ cwt	465	521	745	880	1000	
℔ cwt	18/0	18/9	19/3	2:/3	22/6	

Seven-ply.

B.W.G.—Nos	0	1	2	3	4	5
Yards ℔ cwt	165	200	225	260	305	305
℔ cwt	16/3	16/9	17/3	17/9	18/3	19/9
G.W.B.—Nos	6	7	8	9	10	
Yards ℔ cwt	465	545	700	800	950	
℔ cwt	20/3	21/6	23/3	23/6	26/9	

Machine Cut Fencing Staples.

B.W.G.—Nos	5 & 6	7	8	9
Black, ℔ cwt	10/9	11/3	11/9	12/9
Galvanized, ℔ cwt	18/3	18/9	19/3	20/3

Kegs, 1/2 each.

Straining Eye Bolts, with Nuts and Washers, 14 inch x ¼, 3/6; 16 inch x ⅜, 4/5; 18 inch x ½, 5/0 ℔ doz. Galvanized, 2/ ℔ doz. extra.

Best Galvanized Rope Wire, in Long Lengths.

B.W.G.—No	0-6	7	8	9	10	11	12 13
℔ cwt	13/6	14/	14/3	14/9	15/6	16/3	17/ 17/9
B.W.G.—No	14	15	16	17	18	19	20
℔ cwt	19/	20/3	21/9	23/3	25/3	27/3	29/3

Above prices are for delivery at works. F.o.b. London, 15/10 ℔ ton extra. F.o.b. Liverpool, 10/ ℔ ton extra.

FOREIGN.

FRANCE.

(*Moniteur des Interets Materiels*)

PARIS, August 6, 1883.—*Metals.*—Crop prospects being decidedly less favorable, business is slow in recovering, and Metals are flat and unaltered. We quote, in francs per 100 kg.: *Copper*—Chili Bars, 105 @ 168.75; Ingots and Slabs, 171.25. Best Selected, 175, and Pure Corocoro Ore, 170. *Tin.*—Banca, 257; Billiton, 254; Straits and Australian, 252.50, and English, 250. *Lead*, 31.25 @ 32.25, and *Spelter*, 40 @ 40.50. *Iron.*—The agreement between the Government and the six great railroad lines insures the building in ten years of 5700 miles of railroad, at a cost of 1,800,000,000 francs, toward which the Government contributes 800,000,000 and the railways 1,000,000,000. Although our own market is dull at present, a good deal of Iron and Steel is offered here from abroad at low prices, especially the latter from Germany. We quote on the spot: Merchant Iron, 18 francs ℔ 100 kg.; Charcoal do., 24; Sheets, 23 @ 26, and Wire Nails, No. 18, 27 francs, in bulk. There paid town dues in this city during the first four months 15,609 tons Pig Iron, against 18,455 last year, and 19,773 Finished, against 21,034. At the North there is no change. In the Haute-Marne prices are well sustained, and a good trade is transacted thereat. They quote Coke Iron 19 francs; Mixed, 20.50. In the Meurthe and Moselle, business does not yet pick up, although liberal concessions are made. They quote White Pig, 6.40, and No. 2, 7.80. About the strike of founders and molders in the Central district at St. Etienne, it should be remarked that the same operatives struck last year at this time, and that employers had to yield, being under delivery on pressing contracts. This year the very reverse is the case; hence our owners of foundries are in no hurry to yield to the demands made. *Coal.*—The market remains inactive, without change in prices.

BELGIUM.

(*Moniteur Industriel.*)

BRUSSELS, August 6, 1883.—*Iron.*—We are glad to be able to state that the improved feeling and greater firmness, announced in our last report and preceding one, seem to take a firmer hold upon the market, without so far deserving the name of a full revival. However this may be, it is certain that all makers of note have got plenty of work on hand and try to raise prices of their output. They are not yet followed by smaller works, still obliged to feel their way cautiously. One point seems to have been gained, that of putting a stop definitively to all weakening tendencies. Only a few additional important orders would start quite a movement; hence the prospect before us is most encouraging, so that the foundation seems to be laid for a good fall campaign. Prices have so far varied but little, but are decidedly firmer. English Pig Iron is held with greater stiffness at 5.75 francs ℔ 100 kg., while Charleroi quotes 7.25, Foundry, and Luxembourg, 6. Little could be procured at these figures. Puddling Pig is now procurable at 4.50 @ 5.50 and Athus-Halanzy at 5. At these rates some sales have been effected; blast-furnace owners seem determined not to budge from this rate. As for rolling-mill products, we perceive that at current rates they find no difficulty in placing good round lots, so that Merchant Iron may now be quoted 12.50 @ 13. We quote No. 1, 12.75; No. 2, 13.50; No. 3, 12.50; Beams are done at 13, and Corners at 13.50. Sheet Iron cannot be quoted any better than 17 francs. No. 2: 19, No. 3: 23, Commercial; 25, Thin, and 27, No. 4. As regard rolling stock, there is a good demand, especially for Austro-Hungary, where a fine cereal crop requires additional cars to move it. The Toscolia left Antwerp with a cargo of sugar machinery and a portable railway for St. Domingo, the former built by the Fives-Lille Co. *Coal* is in good position and rising.

GERMANY.

(*Borsenhalle.*)

HAMBURG, August 8, 1883.—*Iron.*—Not much of a change has occurred in the German Iron regions; a slightly improved tendency is nevertheless perceptible, but not sufficiently so to prognosticate the advent of a general buoyancy in Iron matters. In Westphalia, the demand for Pig Iron appears to be on the increase; buyers have been out of the market for some time, but evidently cannot delay laying in stock any longer. An advance in Pig Iron is, however, prevented by the cheapness of English, even in the event of greater activity now setting in. At any rate, any further decline is arrested, but makers have barely arrived at the point where they can clear a living profit on their rolling-mill products. The Meurthe and Moselle German rolling-mill owners have met and agreed that they will not sell below the present price list laid down by them as a basis; in order to enforce this rule, they have reduced their output to the current requirements of consumers. Special orders they execute at a living profit. What precedes shows that a solid and spirited fall campaign seems to be at hand, starting at prices moderate enough to encourage a serious revival on all hands, toward which tolerably good crops will no doubt contribute their share. German blast furnaces have produced during the first half-year 1,670,000 tons of Pig Iron, against 1,515,000 in 1882. At Dusseldorf the tendency in the Iron market is also decidedly better, in consequence of an increase of commands; Bar Iron is in better request; Sheets, on the other hand, are weaker. In Upper Silesia, Finished Iron has not been raised any further. *Coal.*—There is such a large export demand that the general market is favorably influenced thereby. *Metals.*—Not much doing, and no change. We quote German Lead 13.37½ marks ℔ 50 kg; Copper, 70 @ 78; Tin, 105 @ 108, and Spelter, 15.15 @ 15.50.

HOLLAND.

(*Koch & Vlierboom.*)

ROTTERDAM, Aug 6, 1883.—*Tin.*—Since the Netherland Trading Co's. sale the market has remained firm, and we may quote Billiton, spot, 58.50 guilders ℔ 50 kg; distant futures, 57; Banca, cash, 57.50, and from the Sept. sale, 58. At Amsterdam the market is weaker, and above figures would have to be shaded half a guilder to induce dealings.

SPAIN.

(*Revista Minera.*)

MADRID, Aug. 4, 1883.—*Metals.*—The Government has just published the returns of shipments from Spain during the first five months.

	Tons. 1881.	Tons. 1882.	Tons. 1883.
Calamine	9,927	14,700	17,258
Copper Ore	190,196	251,510	265,007
Iron "	1,487,419	1,373,132	1,781,886
Other Ores	32,288	27,946	44,493
Quicksilver	1,100	953	301
Ingot Copper	6,338	9,599	9,741
Finished Iron	13,043	18,954	21,106
Pig Lead	42,897	47,442	51,068
Total	1,783,258	1,744,236	2,190,860

It will be noticed that there is quite an increase in every item except Quicksilver, which shows a remarkable decrease.

EAST INDIES.

(*Gilfillan, Wood & Co.*)

SINGAPORE, July 4, 1883.—*Tin*—Prices have been irregular, ranging from $29.87½ to $30.50, and closing at $30.25 ℔ picul. Purchases during the fortnight have been 420 tons, most of which has been shipped to New York. The exports from the Straits last month were 1045 tons to New York and 300 to the United Kingdom. *Freights.*—The supply of tonnage, both steam and sail, is large, and rates tend downward. For New York the D. Dubrovachi has sailed, and for Boston, the Albert Russell, with 843 piculs Tin, leaving the berth vacant. *Exchange* is steady at 3/8⅝ for six months' sight credit drafts on London. Between June 19 and 30 the Albert Russell left for Boston with 841 tons Tin, and for New York the following vessels with the amounts set against each: The Mosser, 420 piculs; the Albany, 840; the Stentor, 2519; the Rohilla, 1681, and the Fembrokeshire, 1252.

(*Schmidt, Kustermann & Co.*)

PENANG, June 30, 1883.—*Tin.*—The market opened at $29.70 for Larut, and $29.40 for Touckah. While the former has been sustained, and closes at $29.80, Touckah has declined to $29.20½. Receipts were 7500 piculs, of which 5500 were taken by Chinese and 850 by Europeans. *Exchange*, 4 months' bank, 3, 8⅝.

(*Hessenauer & Co.*)

COLOMBO, July 7, 1883.—*Plumbago* has been inactive at ensuing quotations ℔ cwt., in rupees: Fine Lump, 140 @ 150; Ordinary, 125 @ 130; Chips, 60 @ 70, and Dust, 40 @ 50. Shipments to date to England, 83,006; to Trieste, 205; to Havre, 755; to India, 3016; to the United States, 113,896; together, 200,878, against 168,977 in 1881, 137,707 in 1880 and 148,854 in 1879. *Exchange*, 1/8 1 32.

Immigration into the United States.

From particulars recently issued by Joseph Nimmo, Jr., Chief of the Bureau of Statistics, relative to immigration, it appears that during the month of July there arrived in the customs districts of Baltimore, Boston, Detroit, Huron, Minnesota, New Orleans, New York, Passamaquoddy, Philadelphia and San Francisco, 56,278 passengers—of whom 46,220 were immigrants, 6169 citizens of the United States returned from abroad, and 3889 aliens not intending to remain in the United States. Of this total number of immigrants, there arrived from England and Wales, 7574; Ireland, 5288; Scotland, 1950; Austria, 1210; Belgium, 219; Bohemia, 733; Denmark, 1244; France, 187; Germany, 13,203; Hungary, 657; Italy, 859; Netherlands, 241; Norway, 2443; Russia, 927; Poland, 169; Sweden, 3253; Switzerland, 613; Dominion of Canada, 4383, and from all other countries, 1067. The total number of immigrants arrived in the above-named customs districts and from the principal foreign countries during the month of July, 1883, as compared with the same period of the previous year, is shown by the following table:

Customs Districts.	July. 1883.	July. 1882.
Baltimore	2,135	2,398
Boston	4,555	5,631
Detroit	1,773	2,056
Huron	2,901	6,463
Minnesota	248	111
New Orleans	138	12
New York	31,777	38,619
Passamaquoddy	233	357
Philadelphia	2,219	2,536
San Francisco	181	6,827
Total	46,220	65,010

Countries.	July. 1883.	July. 1882.
England and Wales	7,574	6,899
Ireland	5,288	5,638
Scotland	1,950	1,111
Austria	1,210	1,180
Germany	13,203	16,721
Italy	859	1,118
Norway	2,443	3,206
Sweden	3,253	5,888
Dominion of Canada	4,383	7,282
All other countries	6,057	15,907
Total	46,220	65,010

It may be of interest to state, by way of further explanation, that the arrivals of immigrants in the customs districts above specified comprise about 97 per cent. of the immigration into the entire country.

British Trade for Six Months.—The London *Trade Journal*, in reviewing the commercial situation during the first six months of the year, says: "The statistics are remarkable, not so much for the slight improvement which they reveal in the later relatively to the earlier months, as for the fall in prices of manufactures, and to a considerable extent of raw materials, which they disclose. In this decline of values may probably be found an explanation of the general complaints about the absence of profits which are met on every side. Comparing the prices of 34 leading commodities—raw materials and food products—on January 6 and June 30, we find that 15 show a fall and 13 a rise, while 6 remain stationary. Surveying the 12 months, it will be found that the most pronounced fall occurred in the final quarter of 1882, and that while prices are generally lower than in July last year, the depreciation in 1883 is mainly confined to manufactures. Examining the usual tests, it will be found that throughout the half-year the volume of our business has been increasing, and that the growth during the June quarter was distinctly larger than in the quarter ending March. Nor should it be forgotten, in estimating this, that during the last three months our trade had greater difficulties to contend with than in the previous quarter—a temporary curtailment of our American imports being occasioned by the postponement of the alterations in the United States tariff, and our trade with China being adversely affected by the Tonquin dispute. The prospect of a good harvest is promising, and, as we have the command of an abundant supply of the raw material for manufacture at low prices, we may expect the growth of our trade to continue."

Test of Straw Lumber.

Some straw lumber, accounts of which have within the past few months appeared in the technical press, was recently subjected to tests in Chicago, and, judging from the particulars now at hand, it would seem that the material, while possessing some very good qualities, still has not met all expectations. In this particular case, however, the unfavorable results of the experiments have, in a measure, been attributed to the fact that the material was not equal to some samples which have thus far been placed upon the market. When used as a ceiling the material was found to serve very well, but when used as a floor the results were apparently not at all encouraging. As described by one of our Western exchanges, it appears that in this case the lumber was laid as an experiment over another floor, the slabs being first treated to a peculiar solution. There was considerable trouble and expense attendant upon laying it, the slabs requiring to be placed and jointed very carefully. The material was found to be neither durable enough for this purpose nor devoid of warping tendencies. It was also readily attacked by heat and moisture, the results being occasional uneven patches of surface, blisters, &c., while some of the pieces warped to such an extent as to draw out the nails.

However, the possibilities respecting future results are still very great, and in course of time, when experience shall have demonstrated what can be done in that direction, it will not be strange if the process of making straw lumber or some similar material will have resolved itself into an unquestionable success. Probably the safest way of using the material now is to apply it to numerous smaller uses which will not require great strength or endurance. There are, in fact, a great variety of me hods in which it can be successfully employed, and the mere fact of a few discouragements at the beginning does not do away with the probability that these difficulties may ultimately be conquered.

The Decay of Art Industry in France.

The decay of art industries of France is the subject of a long report just published by M. Antonin Proust. M. Proust thinks it is nearly all owing to the want of good technical education. The Revolution broke up the old trade corporations and their system of apprenticeships, and there is nothing to take their place. He lays great stress on such well-known facts as the steady advance of England in art manufacture since 1851, and he thinks France must make great efforts or fall quite behind in the race. The main recommendation of the report is in favor of a radical improvement in the methods of teaching. A writer in the *Intransigeant*, M. Malou, an economist of no mean order, has taken a broader and more statesmanlike view of the situation. The defects of the apprenticeship system, he says, are but one cause out of many of the decay of French art industries. The other causes, and the chief, are those that affect all the national industries. There may be a certain want of skill in the French workman, as compared with his fathers, but that is nothing to the want of enterprise and energy in the French employer. Everything that affects industry in general must affect art industry, for an industry by merely being associated with taste in production does not escape general laws. Many things tell against French production nowadays. First, there is the enormous public debt of 34,000,000,000 francs, which makes everything dear; then, the strongly-marked tendency of the French manufacturer to speculate with his profits rather than invest them in his own business. He "plays" on the Bourse and tries to make money in that way, while his English rival would be spending every spare penny in improving his means of production. In consequence, French industry suffers from an inferiority in the plant of manufacture; old machines are still used and improvements are not adopted the moment they come out. The cost of transport again tells heavily against the producer, as railway tariffs are not readjusted to meet the expansion of trade.

Messrs. E. L. Harper & Co., of Cincinnati, Ohio, have just sent us a circular giving the results of a series of tests of "Victoria" pig iron, for which they are sole sales agents. The figures given are very satisfactory and well calculated to favorably impress the trade with the good qualities of the iron.

The new steamship Mariposa, built by the Cramps, of Philadelphia, for the Oceanic Steamship Co., made her first trip from San Francisco to Honolulu in 5 days, 20 hours and 30 minutes, beating the fastest time on record between those ports. Her average speed was 15 miles an hour.

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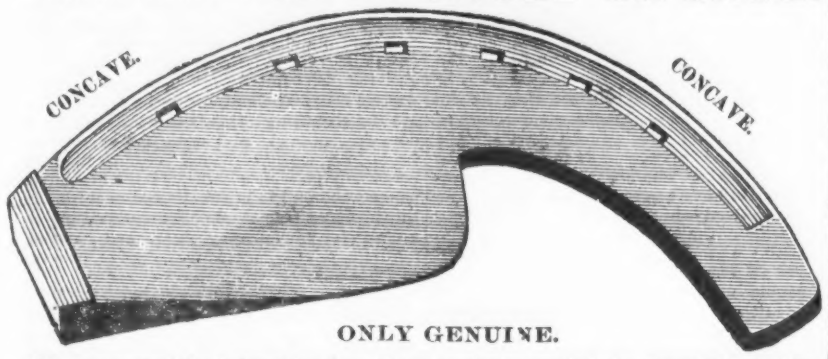

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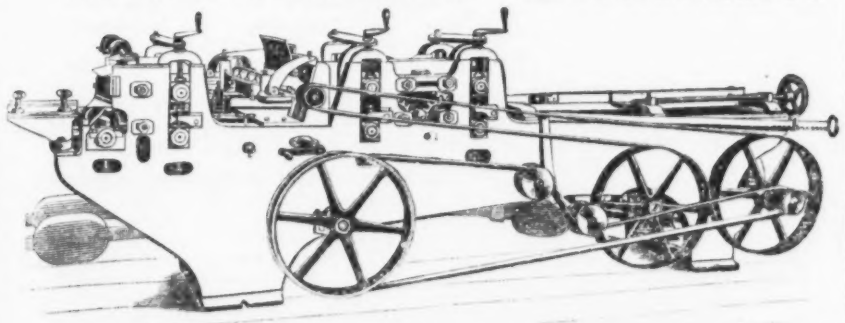

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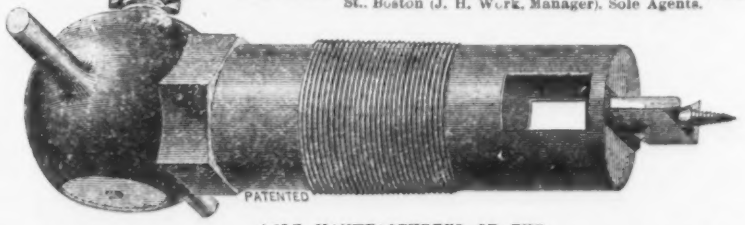

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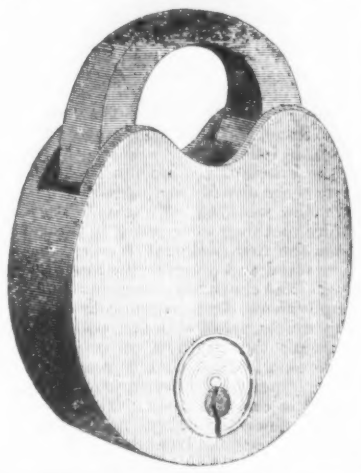

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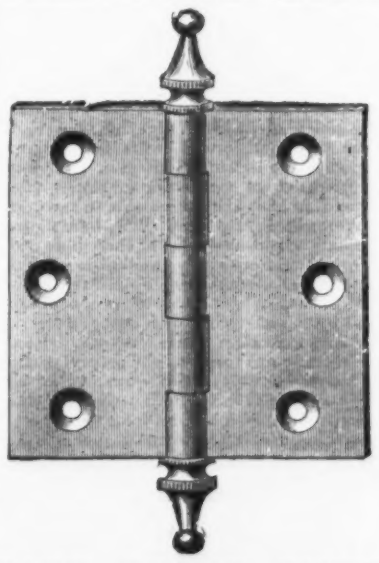

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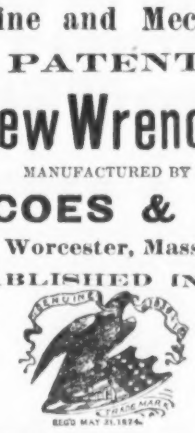

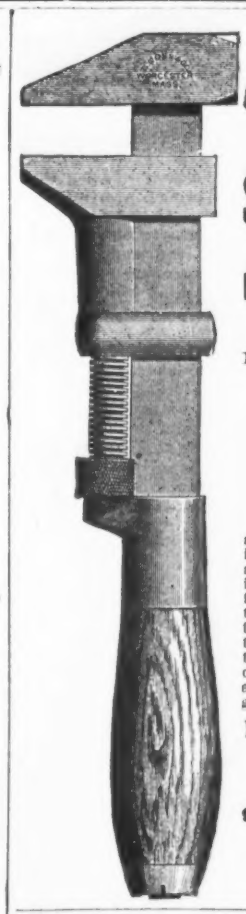

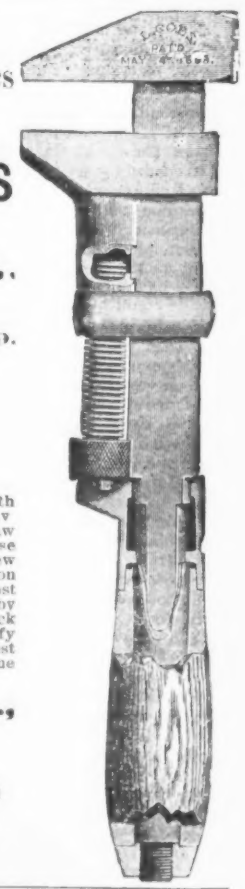

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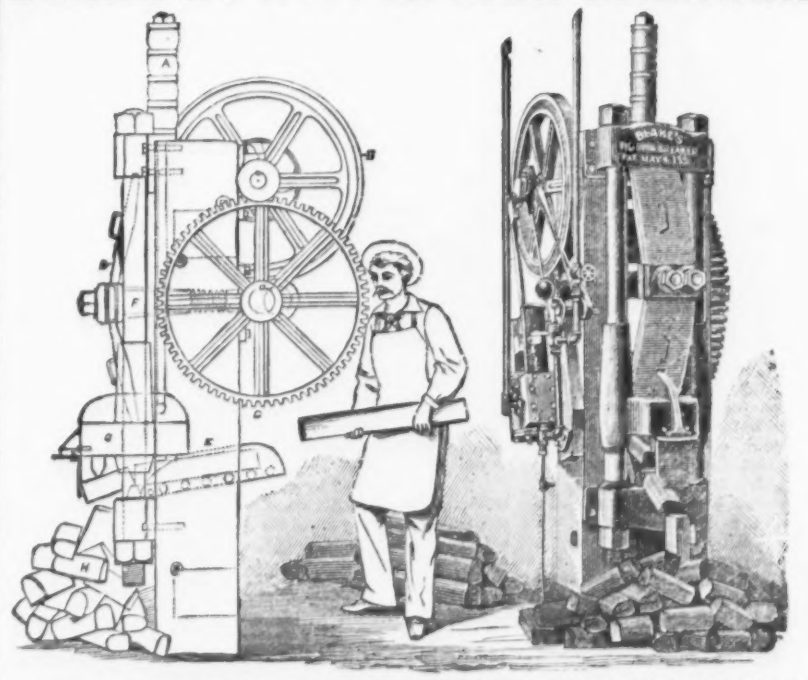

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Krupp's Works at Essen.

Mr. Robert P. Porter, in his letter on "Industrial Germany," written for the New York *Tribune*, gives the following interesting account of Herr Krupp's extensive works at Essen, Germany:

Essen, for a manufacturing place, is clean and exceedingly well built. The road leading to Krupp's was shaded by trees on both sides. The area occupied by the works is much greater than that covered by the town of Essen itself, though the population, according to the census of 1880, was nearly 60,000. A road runs through the center of the works and leads to the colony, as it is called, where the operatives live. Passing along this road at about 9 o'clock in the morning one meets scores of women dressed in the gayest colors, some with large baskets of provisions, and others wheeling in front of them green and yellow barrows loaded with baskets of bread and vegetables. They are a contented, healthy-looking people, and their bright-colored dresses and the clean handkerchiefs tied over their heads are a great contrast to the gloomy attire and half-combed hair of the women I met in the iron districts in England and Wales. Many of the women wear wooden shoes, some of them good stout boots. All of them were neatly clad.

It is no easy matter to obtain admission to Krupp's, but permission for my visit had been secured some days before. At the outer office I stopped, and my card was sent up to the main office, and then a messenger was sent down to conduct me to the principal offices, where, after greeting some of the directors, I was introduced to a young gentleman who was to be my guide through the works. The extent of these works may be imagined from the fact that after nearly four hours' steady and rapid walking through myriad shops, some making crucible steel, some puddled steel, some Bessemer steel and some Martin steel; through mills making steel rails, steel tires, iron and steel plates; iron foundries for machine castings and for projectiles; locomotive and wagon-wheel works; boiler and girder shops, gun shops, mechanical shops, smith and a score of other kinds of shops, one is conscious only that he has had a bird's-eye view of Krupp's works. In these shops there are no less than 1600 furnaces of various construction, not far from 300 boilers, between 80 and 90 steam hammers from 100 to 50,000 kg. weight, 25 rolling trains, 320 steam engines of from 2 to 1000 horse-power, and about 1700 machine tools of various kinds. The machine shops reminded me of those in Elder's shipyards at Glasgow, while the works, as a whole, seemed like several large steel works combined into one. Nearly 3000 tons of coal and coke are consumed daily in the works, and the smoke escapes from innumerable tall chimneys and blast furnaces. The establishment has its own water and gas works, and, besides the electric lights, there are nearly 25,000 burners. The firm have their own chemical laboratory, photographic and lithographic establishment, printing shop and bindery. There are about 50 miles of telegraph and 35 telegraph stations belonging to the establishment.

After I had inspected the works and admired the gigantic guns and the shops in which they are made, my guide kindly offered to take me to the colony to see the homes of the workingmen. These houses are not far from the works, but are comfortably located on high ground, and well shaded with avenues of trees. How they retain their verdure is puzzling amid so much smoke and heat. The firm of Fried. Krupp at present owns 3250 well-built, and to all appearances healthy, dwelling-houses, in which over 16,000 individuals are living. The buildings have two and three floors, and are constructed partly of stone and partly of framework, and are surrounded as much as possible with gardens. The single dwellings, which, besides cellarage and garret, have from two to four rooms, are self-contained and separated from the other dwellings. The letting to lodgers is permitted only in dwellings of three to four rooms, and must receive the special permission of the Central Committee appointed for maintaining cleanliness and order. The annual rent for the family dwellings varies as follows:

	Per year.
For two rooms in lodging-house or barrack-house	$15 to $22
For two-room house with cellar	22 to 27
For three-room house with cellar	30 to 40
For four-room house with cellar	45
For five-room house with cellar	52

Thus, for $1, or about 4s., a week, the usual price for small cottages in the industrial districts of England, the German artisan at Essen can rent a large house and garden; while for 1s. 2½d. a week the British workman could not get a room. The Dundee pigstyes and the hovels of South Wales rented for 2s. 6d. to 3s. a week.

I visited a sample of each of the houses at Essen and conversed with some of the inmates. Upon the whole, they are better off than the industrial classes in many of the English districts. At the same time, they did not strike me as more comfortably situated than the working people of a place like Middlesboro', where the houses are new and the operatives fairly well paid. The interiors of some of the Essen houses were anything but clean, and the atmosphere was fetid. There is certainly no squalid misery, and the average workman and his family have plenty to eat and are comfortably lodged. The German drinks beer, and in the summer spends the evening often with his family in the beer gardens, of which there are seven belonging to Krupp. The German workman is more moderate, more economical and drinks less gin than the ironworkers of Scotland and England, and rarely beats his wife. But even in a place like Essen, which is above the average, there is a marked difference between the Continental and American workingman, and the condition of workers here will not compare with the advanced condition of the artisan in such places as Johnstown and Pullman in our own country.

The single men at Krupp's are provided for in a large boarding-house capable of keeping 1800 boarders, at a cost of about 80 pfennigs (20 cents) a day, bread not included, making the probable cost about 1 mark, or about 25 cents per day. Herr Klüpfel, the director, who has charge of the labor department at Krupp's, told me that no men were now being paid less than 3 marks a day (about 75 cents). This is, of course, to the unskilled laborer. Skilled labor is paid from 3½ marks to as high as 7 and even 9 marks a day for skilled mechanics in the machine shops, but this was, of course, exceptional, the wages not often exceeding 5 marks, or a little over $1 American money. For these same classes of labor the American manufacturer probably pays $2.50 or $3, and even $5 a day. Connected with Krupp's are sick and pension institutions, out of the funds of which temporary support and pensions are paid to members who have been disabled in the service of the firm, or to their widows. Also to those who have worked for many years and are too old for further service. There are also a hospital, bathing establishment, life-insurance union, and primary and industrial schools, all connected with the firm. The labor of women and children is excluded from the works.

In the afternoon Herr Osann and myself were invited to dine with some of the directors of the works, and to these gentlemen, especially to Herr Jencke and Herr Klüpfel, I am indebted for many interesting facts concerning Krupp's. Both of these gentlemen expressed surprise when I informed them of the lowness of wages in England. They had hardly realized how rapidly the industrial centers of Germany had in the last few years been improving the condition of the workman by paying him higher wages and enlarging his opportunities. But with all that has been done by such men as Herr Krupp and the able men he has drawn around him, much yet remains, and the task to elevate labor in Germany is no easy one.

English Manufactures and Our New Tariff

A recent issue of the Manchester (England) *Guardian* contains an article of no little interest to our readers, bearing, as it does, upon the probable effects of the new tariff on English manufactures. We quote as follows:

So far as pig and manufactured iron are concerned, the new American tariff is now in operation, but what effect it will have upon the trade of this district as yet remains to be seen. Somewhat sanguine hopes have been entertained that a better trade will be the result, but it must be borne in mind that in revising the tariff it has not been the aim of the American Government to develop the trade of this country, but rather to help forward their own industry, and that it has been practically on this basis they have worked in arranging the new charges. The general opinion, however, entertained by those who have recently visited the States and by leading makers at home is that the new tariff will tend to increase, and not to lessen, business, but that a great deal will depend upon the interpretation which may be put upon some of the clauses, and that until these have been tested it is not likely that business will be stimulated to any great extent specially by reason of new tariff charges. There is a belief that some loop-holes may be found capable of being "worked" more to the benefit of the importer than at present appears on the face of the revised scale of duties, and, as an illustration of what was done under the old arrangement, it may be mentioned that it was a frequent practice to have holes punched in the ends of hoops, so that they might pass customs under the more favorable scale as barrel hoops. Although this involved an extra charge of 15/ per ton by the English maker for punching holes which were not wanted, but were afterward cut off, it was found to pay the importer.

Another consideration which will largely affect United States imports of iron from this district is the probable course of action which American makers may take; already a number of the American works, unable to meet the cost, are being "shut down," and it is a question how far this restriction of the output may go. Up to the present, except in cotton-tie hoops, of which large shipments have been made, the new American tariff has had no appreciable effect upon the American demand for iron from this district. As to the probable effects of the new tariff, there is a good deal of variance in the opinions expressed by the Lancashire makers of finished iron, but the general impression may be summed up as follows: In wire rods it is thought the new arrangement will enable an increased business to be done, and that all iron (steel?) intended for fencing purposes will get in under favorable terms.

The Philadelphia and Reading Railroad Co. are reported as contemplating the manufacture of longer and much heavier rails than now in use. The length is to be increased from 30 to 60 feet and the weight will be 70 pounds to the yard, as compared with 68 pounds in the 30-foot rails. The increased length, it is claimed, will possess many features of economy. Thus, the proper keeping up of the joints at the ends of the rails constitutes an item of considerable expense, and any reduction in the number of these joints will naturally be attended by a corresponding saving. The additional strength to be given to the splice-bars in uniting the ends of the rails has been made necessary by a continually increasing traffic, which must be met not only by strengthening the rail, but also by cars of increased carrying capacity and by increased weight of the locomotives. In alluding to the increase in weights passing over the rails, it may be of interest to state that the weight of a passenger car on the special road here considered has been increased from 25,000 to 45,000 pounds, and that the parlor cars now used weigh 75,000 pounds. The weight of the freight and coal cars has been so far increased as to more than double their former carrying capacity, while the weights of locomotives have been increased in proportion. The company have arranged for the manufacture of a quantity of these 60-foot rails at once, and the best results are looked forward to.

Reports from different locomotive works seem to point to a general falling off in locomotive building. A cause for the present dullness is, perhaps, found in the cessation of railroad extension in many sections of the country, and also in the fact that nearly all roads are now fully equipped with motive power to handle an immense volume of business.

The Manufacture of Zinc in Belgium.

Among other papers read at the recent meeting of the British Institution of Mechanical Engineers, the above, by M. St. Paul de Sinçay, claims the special attention of those interested in the development of the industry and the accompanying historical particulars. A good deal of space has been devoted to these—so much, in fact, that we must restrict ourselves to a comparatively brief abstract, as follows:

At the epoch of the Roman invasion the Belgians were already distinguished for their skill in the working of metals. There is, therefore, nothing astonishing in their having been the first nation of Western Europe to understand and practice the manufacture of zinc. The continual communication they kept up with the East introduced into their country a new metal of a fine yellow color, and having the qualities of copper. The Belgians soon learned that it was made by alloying copper with a mysterious substance contained in calamine rock. This rock was probably known throughout a large part of Belgium, and not far from the Liège district and the frontiers of Germany there existed a bed of this mineral having an exceptional richness and extent. This great bed was named the Moresnet Bed. Here was the seat of the first working of calamine (carbonate of zinc), and ancient documents relate that it was raised in the neighborhood at the beginning of the seventh century. The ores were calcined, or burnt, as it was then called, on the spot, for which purpose wood charcoal was employed. Thus prepared, the ores were sold and transported to different localities where copper was beaten. It is known that the yellow metal was prepared by mixing in crucibles red copper and calamine, after an addition of charcoal, and the brass was then transformed into articles of all kinds, specimens of which are still existing, and bear testimony to the remarkable skill of their artists.

Up to 1806 Belgian calamine had only served for the making of brass, but for some time the question had been agitated of abstracting from it the metal which it contained, and under this impulse the Belgian Government imposed on their lessee, Dony, an obligation to make "such experiments as might be judged useful, in order, by the aid of suitable furnaces, to reduce the calamine to a metallic state." After long effort, great expense, and numerous attempts, the original and perserving genius of Dony overcame all difficulties. On the 7th of December, 1809, he demanded a patent for 15 years, "for the construction of a furnace suitable to extract zinc from calamine, and for the processes employed in this operation." Dony was recompensed by the protection of the authorities and by the praises of scientific men; but this was not sufficient to restore his broken fortunes. He hoped to find a market for his metal with the brass founders, but these preferred to treat their copper as their fathers had done before them. It became necessary to find applications for metallic zinc, and to promote its use. In 1818 Dony, completely ruined and worn out by his labors, definitely resigned in favor of Dominique Mosselman. The latter gave a strong impulse to the zinc trade, and in 1837 his sons took up the task, and formed, with their father, the Société de la Ville Montagne. Belgium now possesses 11 works for reducing zinc ores, and in 1882 they were able to turn out 71,565 tons of raw zinc. This total figure represents about one-third of the whole production of Europe. The annual amount of ore consumed is considerable—in fact, about 200,000 tons, only a part of which is furnished by the mines of the country. For several years calamine (carbonate of zinc) has been the only ore treated. The preference thus given to it is easily explained by the facility with which it lends itself to metallurgical operations. For a long time it was believed impossible to utilize the blende (sulphide of zinc), but 30 years ago the making of zinc began to be largely extended, and it was necessary to have recourse to new supplies of mineral.

Attempts were then made to make use of blende; special workshops were constructed for the desulphurizing of the new ore. In Belgium the chief works for roasting blende are those of Bleyberg, Engis, Flône, Ampsine, Corphalie and Sclaigneaux. Foreign calamine is generally calcined before being shipped; blende, on the contrary, is usually shipped in its raw state, and has to be submitted in Belgium to the preparatory treatment which its nature requires. The Belgian foundries require from abroad nothing more than a supply of ore, for everything else they find in their own country and neighborhood, and all the resources necessary. Situated in more or less close vicinity to numerous collieries, they can choose the bituminous coal best suited to the system of furnace they have adopted. For the manufacture of zinc, the question of refractory materials is of very high importance. The Belgian works obtain from large beds near Ardenne a refractory clay, with which they manufacture articles of an excellent quality and of long-established reputation.

THE METALLURGY OF ZINC.

The different processes for the reduction of zinc ores are well known. The *per descensum* process has scarcely ever been practiced except in England. On the Continent the methods in general use are the Liège method and the Silesian method. Neither of these since its commencement has undergone any essential change, and they may be employed at present side by side with each other. The Liège furnace is generally higher than its width, and contains six, seven or even eight ranges of crucibles. These furnaces occupy little space, and also consume less fuel than the Silesian furnaces. The latter, on the other hand, are cheaper as regards labor and the durability of the distilling apparatus. To complete the essential distinctions between the two, it may be said that the Silesian furnaces are specially adapted for treating poor ores, and this should be so, since they were invented to reduce the calamines, low in proportion of metal, which are worked in Silesia.

Belgium, as might be expected, has remained faithful to the Liège or direct-heating process, inaugurated by Dony. The works of Valentin Cocq and Flône are the only ones which possess furnaces agreeing with the Silesian system in their mode of heating; but, being provided as they are with crucibles in three ranges, they share equally the advantages of the Liège method. Great efforts have been made to perfect the metallurgy of zinc. These have opened the way to progress in many respects. In all the operations required—in the preparation of the refractory materials concerned, in the crushing of the ores, in the composition of the charges, in the construction of the hearths, in the arrangements and dimensions of the heating chambers—important improvements have been realized; in all, new and improved appliances have come into use, which, for the most part, are due to eminent manufacturers in the district. Above all, changes have been made tending to render more easy and less dangerous the labor of the workmen. Thanks to other improvements, the results of the process have been sensibly improved. It has especially been sought to augment the production of the furnace, to reduce the "écart" or loss of metal during treatment, and lastly to diminish the consumption of fuel. In all these ways notable progress has been realized. The zinc vapors formed in the crucibles are condensed in receivers made of refractory earths, and called tubes or bottes. From these the liquid metal is withdrawn, either several times during the operation or once for all at its termination, and it is immediately run into ingots or rectangular plates, of a thickness from 20 to 25 mm. (.8 inch to 1 inch) and weighing about 20 kg. (45 pounds).

The first products of the distillation are collected in the form of dust, more or less oxidized, in wrought-iron pipes which form a prolongation of the tubes. This dust, to which has been given the name of gray oxide, must be submitted to a fresh treatment, unless it can be utilized directly for painting or for the making of hydrosulphite of soda. The second treatment is sometimes carried out in a furnace with vertical retorts, which bears the name of its inventor, M. Montefiore, and which is worked particularly at the Corphalie manufactory. The ingots of raw zinc are, some of them, taken to a rolling mill and rolled into sheets. Others are reserved for making oxide of zinc, and others, lastly, destined for different industries, such as the making of brass, are sold in the condition in which they leave the foundry.

ROLLED ZINC.

The uses of rolled or sheet zinc are numerous and varied. New uses are created every day. The consumption of rolled zinc, which has long been large, increases continually, and the greatest part of the zinc produced in Europe is not used until it has been passed through the rolls. The rolling of this metal at first encountered very great difficulties. These arose from the fact that its malleability is confined between very narrow limits of temperature. For this reason the rolling of zinc will always remain a delicate operation, which can only be intrusted to experienced hands. The most suitable temperature is about 100° C. = 212° F., and this must be maintained through the whole of the process. Below this point the metal opposes too great a resistance to the squeezing action of the rolls, and it must be reheated, which is a matter of much inconvenience. Above this point it becomes brittle; at 200° C. = 390° F. it can be brayed in a mortar. Whatever its method of manufacture, zinc ought to be remelted before being rolled into sheets. The heat of fusion varies between 400° and 500° C., or 750° and 930° F. Remelting is generally accomplished in a reverberatory furnace. Its first advantage is that it rids the zinc of the impurities, especially lead, which almost always accompany it. Again, the thickness of the ingots must vary with the final dimensions required; this is another consideration which render remelting indispensable. The remelted plates are first roughed down or rolled between heavy rolls; then, after being cut down to a fixed weight, they are conducted to the finishing train, where the rolling is completed. There are, therefore, two distinct operations—the roughing down and the finishing. Between the two the sheets should be reheated in annealing boxes placed upon the melting furnace, so as to utilize the waste heat. Each of these operations gives rise to a production of scrap which is more or less large according to the quality of the metal and the tenacity of the sheet. This scrap, as well as any defective sheets, are remelted with the ingots coming from the foundry. On leaving the finished rolls, the sheets are cut by shears to a rectangular shape, and to the dimensions required by commerce. There are several systems of shears; those most used in Belgium are the lever shears and the guillotine shears. The latter, which at present have the preference in the rolling mills of the Vieille-Montagne Co., cut the metal perfectly clean and exact.

After being squared, the sheets of zinc are sorted with great care. Those which are found to answer all the conditions are impressed with the stamp of the works. The thickness is specially gauged, and is expressed by a number on a fixed scale. It varies between .05 mm. and 4 cm. (.002 to 1.575 inches). Zinc sheets are delivered sometimes loose, generally in barrels or boxes; hence a cooperage is an indispensable adjunct to a store for rolled zinc. This accessory is mentioned on account of its real importance. Belgium manufactures annually nearly 40,000 tons of sheet zinc. The rolling mills which contribute to this production are, in the first place, those of the Vieille-Montagne Co., at Angleur and Tilff, which together furnish nearly 20,000 tons per annum. The remainder of the make is divided between the works of the Nouvelle Montagne Co., at Engis; those of the Société de Prayon, at Prayon; those of MM. Francotte-Pirlot & Co., at Chênée and Liège; those of M. E. Nagelmackers, at Chaudfontaine; those of M. Charles Heptia-Hauzeur, of Fraipont; those of Madame Veuve Bonhomme, at Nessonvaux; those of MM. Lejeune Frères, at Stère; those of M. L. Dacier, at Liège; those of M. J. Brasseur, at Huy; and those of M. G. Schmidt, at Brussels.

As already stated, the applications of rolled zinc are numerous and varied. We will confine ourselves to a few. The making of roofing sheets certainly occupies the first rank. The systems vary according to the character of the buildings to be covered. For dwelling houses choice may be made between plates having the shape of a heart, a lozenge, a fish scale, a rectangle, &c. All are recommended by many advantages, among which should be specially noted their complete impenetrability to water. Roofs for industrial buildings are generally constructed of fluted or corrugated zinc. Among other applications, some of the chief are the sheathing of vessels; the making of domestic utensils and articles for various trades, for many of which the zinc must be previously pierced with holes; the glazing of paper; the making of tacks and of wire. In thick plates zinc is chiefly employed by engravers for zincography, in arsenals for coating bullets, and in steam boilers to prevent incrustation.

OXIDE OF ZINC.

Zinc heated to a red heat is evaporated, and the vapor coming in contact with air is oxidized and produces a white, impalpable substance which alchemists named *lana philosophica*, and which in modern times bears the name of "zinc-white." This oxide has long been employed for decorative painting. Its brilliant whiteness, combined with the fact that it does not change by the action of the air, and has no ill effects on the workmen who use it, are the principal qualities which have made it the most formidable rival to white lead. In making oxide of zinc there are two processes, equally simple. The sublimation process is the most ancient. To sublime or volatilize ingot zinc, it is placed in a series of retorts within a common furnace; the oxide is formed in an exhaust chimney, and then passes through a long series of passages and condensing chambers. It is deposited in large tanks of sheet iron or cloth, which are ranged all along the path pursued by the vapors. At certain hours in the day the oxide is collected into casks, and then, after the quality has been tested, it is compressed into barrels carefully made, and is ready for delivery. According to the purity of the metal subjected to the process, the zinc-white is obtained varying in color and brilliancy. "Blanc de neige" is a product of the most superior quality, and can only be made with zinc from the ores of the Moresnet beds. "Blanc No. 1" is the most common variety. It requires for its manufacture zinc coming from selected ores, and generally purified by remelting. Lastly, "Blanc No. 2" is the common variety, distinguished from the others by its shade of whiteness, though still identical in composition.

In the making of zinc-white, as in all other manufactures, residues are produced. Drops of metal imperfectly oxidized, deposit in the retorts and waste from the workshops are all classed separately; then, after being ground, washed, and dried by being led through winding passages, they form the "gris-pierre" which is employed in painting to replace minium. The second process for making zinc-white is known as the American method. It uses the ore direct, and is therefore necessarily cheaper than the former; but its products are of inferior quality to those produced by sublimation. There are in Belgium only two works for making zinc-white. The Vieille-Montagne Co. produce annually at the Valentin Cocq works 3000 tons of zinc-white by sublimation. The other works are at Ougrée, and belong to Messrs. Eschger, Ghesquière & Co. There the American method is employed, but at present the works are standing idle.

DIRECT USE OF INGOT ZINC.

As we have said, zinc was employed in the arts long before it was known in the metallic state. As of old, the making of brass continues to absorb the largest quantities in Belgium, and above all in England. Melted zinc is also used to cast ornaments and objects of art, such as statuettes, groups, &c., which are afterward covered with copper by means of the galvanoplastic method, and imitate bronze with a perfection which defies the most skillful eye. The Vieille-Montagne Co. make from the ores of Moresnet, under the name of *fonte d'art*, a variety of zinc which is specially reserved for this purpose. Lastly, the galvanizing of iron, telegraph wires, &c., is a large source of employment for ingot zinc. If the zinc works of Belgium receive a part of their supplies of ore from abroad, in return their products are exported into all the countries of the world. France and England are those which receive the most; Germany, Italy, America, Scandinavia and Holland also take their share.

MAKE OF CRUDE ZINC IN EUROPE SINCE THE YEAR 1860.

District.	1860.	1865.	1870.	1875.	1880.	1882.
Upper Silesia	Tons. 40,254	Tons. 35,430	Tons. 36,528	Tons. 43,183	Tons. 65,437	Tons. 69,846
Rheinprovinz and Westphalia	8,592	16,647	18,006	25,396	27,107	35,546
Vieille-Montagne	28,985	30,592	48,112	41,618	44,690	48,861
Other Belgian makers	9,144	13,485	14,476	18,836	26,700	35,625
Asturas	1,777	1,325	3,048	3,000	4,000	5,047
Spain { Company	.....	.....	.....	5,311	8,591	11,423
Spain { France	.....	.....	500	1,500	3,000	.....
Other French makers	.....	500	1,500	15,903	23,000	25,581
England	6,314	6,583	16,400	3,000	4,463	4,544
Poland	1,500	3,000	3,685	3,000	3,199	3,199
Austria	1,500	1,000	1,000	1,000	.....	.....
Total	97,896	108,562	135,835	158,687	209,187	239,672

In conclusion, the manufacture of zinc, the origin of which in Belgium dates back to so remote a period, has received from the beginning of this century a very large development. By the number of establishments devoted to it, by the quantity and value of the production, by the multitude of workmen it employs, by the importance of the capital which it absorbs, it holds one of the foremost places in the great industrial life of the country. In spite of the depreciation in value of all metals, the production of zinc increases from year to year, and the financial results of the operation are in general satisfactory. The working of zinc has a brilliant past, and it may be hoped that it will still enjoy in Belgium a long era of prosperity.

NEW YORK WHOLESALE PRICES, August 22, 1883.

(For Wholesale Hardware Prices See Pages 31, 32.)

METALS.

IRON.—DUTY: Bars, 8-10 c to 1 1-10 c ₩ lb; provided that no Bar Iron shall pay a less rate of duty than 25 per cent. Sheet, 1 1-10 c to 1 5-10 c ₩ lb. Band, Hoop and Scroll, 1 c to 1 4-10 c ₩ lb. Pig and Scrap, 3-10 of 1 c ₩ lb. Plate, 1¼ c ₩ lb. Railroad Bars weighing more than 25 lb ₩ yard, 7-10 of 1 c ₩ lb.

American Iron		
Foundry, No. 1	₩ ton	$23.00 @ 23.00
Foundry No. 2	₩ ton	19.50 @ 21.00
Gray Forge	₩ ton	18.50 @ 19.50
Scotch Iron.		
Eglinton	₩ ton	21.00 @ 21.50
Carnbroe	₩ ton	22.50 @ 23.00
Coltness	₩ ton	23.75 @ 24.00
Shotts	₩ ton	24.00
Glengarnock	₩ ton	22.50 @ 23.00
Gartsherrie	₩ ton	24.00
Langloan	₩ ton	21.75 @ 24.00
Summerlee	₩ ton	24.00 @ 23.25
Carron	₩ ton	23.00
Rails.		
Steel, at Eastern mills	₩ ton	38.00 @ 39.00
Old Rails 7s		23.0 @ 24.00
Scrap.		
Wrought, ₩ ton from ship and yard		23.50 @ 24.00
Bar Iron from Store.		
Common Iron		
¾ to 1 in. round and square	₩ lb	2.1c @ 2.20c
1 to 6 in. x ¾ to 1 in.	₩ lb	2.1c @ 2.20c
Refined Iron:		
¾ to 2 in. round and square	₩ lb	$2.30 @ 2.40c
1 to 6 in. x ¾ to 1 in.	₩ lb	$2.30 @ 2.40c
1 to 6 in. x ¾ and 6-10	₩ lb	2.50 @ 2.60c
Rods—¾ and 11-16 round and square	₩ lb	2.40 @ 2.50c
Bands—1 to 6 x 3-16 to No. 12	₩ lb	2.70 @ 2.80c
Norway Nail Rods	₩	5¼c

Sheet Iron.

Nos	Common American	R. G. American.
10 to 16	₩ lb 3.15 @ 3.30c	4¼c
17 to 20	₩ lb 3.40 @ 3.60c	4¼c
21 to 24	₩ lb 3.60 @ 3.90c	4¾c
25 to 26	₩ lb 4.00 @ 4.25c	5 c
27	₩ lb 4.25 @ 4.45c	5 c
28	₩ lb 4.40 @ 4.65c	5¼c

	B. B.	
Galvanized, 10 to 20	₩ lb 7 c	6 c
Galvanized, 21 to 23	₩ lb 7½c	6½c
Galvanized, 25 to 26	₩ lb 8¼c	7 c
Galvanized, 27	₩ lb 9 c	7½c
Galvanized, 28	₩ lb 9½c	8 c
Patent Planished	A ₩ lb 10½c	B. 9½c
Russia	₩ lb 13 @ 14c	
American Cold Rolled	B. B. ₩ lb	c @ 7½c

COPPER.—DUTY: Pig, Bar and Ingot, 4c; Old Copper 3c ₩ lb. Manufactured (including all articles of which Copper is a component or chief value), 35 ℅ ad valorem.

American ingot ₩ lb See Trade Report.

SHEATHING BRAZIERS COPPER, BOLTS, &c.

Braziers' Copper, ordinary sizes, 16 oz. per sq. ft., and over ₩ lb 26c

Braziers' Copper, ordinary sizes, under 16 oz. and over 12 oz., ₩ sq. ft. ₩ lb 28c

Braziers' Copper, 10 oz. and 12 oz., ₩ sq. ft. ₩ lb 30c

Brazers' Copper, Lighter than 10 oz. ₩ sq. ft. ₩ lb 32c

Circles 24 in. diameter and over ₩ lb 31c

Segment and Pattern Sheets ₩ lb 26c

Locomotive Fire Box Sheets ₩ lb 26c

Sheathing Copper, over 12 oz. ₩ sq. ft. ₩ lb 23c

Bolt Copper ₩ lb 26c

Copper Bottoms ₩ lb 31 @ 26c

No Copper in Sheathing except 14x48 inches, and not to exceed 34 oz. to the sq. ft.

TINNING.

Sheets 14 x 48 ₩ sheet 8c

If other size sheets, 25c ₩ sq. ft.

For tinning both sides, double the above amount.

O'NEILS PATENT PLANISHED COPPER.—Net.

14x48.

16 oz. and heavier ₩ lb 37c By the case. ₩ lb 36c

14 oz. and lighter ₩ lb 40c ₩ lb 39c

Boiler Sizes.

7 in. 14x52. 8 in. 14x56. 9 in. 14x60.

14 and 16 oz. and heavier ₩ lb 39c By the case. ₩ lb 38c

(And all sizes not over 20 in. wide.)

24x48 & 30x60.

14 and 16 oz. and heavier ₩ lb 41c

oz. ₩ lb 44c

SHEATHING METAL.

Yellow Sheathing metal ₩ lb 20 @ 22c

BRASS.

Brown & Sharpe's Gauge the Standard for Metals. Old English Gauge the Standard for Wire.

BRASS MANUFACTURERS' PRICE LIST.—dis. 30 ℅. June 10, 1880.

Cash prices for Roll and Sheet Brass. For less quantities than 100 lbs add 3c. ₩ lb.

HIGH BRASS.

All Nos. not thinner than No. 28, wider than 2 in., not wider than 14 in. 30c

All Nos. to No. 28, inclusive, and widths over 14 to 20 in., inclusive. 35c

All Nos. to No. 28, inclusive, and widths over 20 to 30 in., inclusive. 38c

4c. ₩ lb advance on each No. above Nos. 28 to 36, inclusive

All Brass thinner than No. 38 is Platers' Brass, at 53c

Sheets 24x48, and all sheets cut to particular sizes and lengths under 30 in., in width wider than 2 in. 37c

Printers' Rules 49c

Sheets wider than 30 in. and under 40 in. 47c

" 40 in. and over 50c

Circular Sheets, in diam. from 4 in. to 14, inclusive 40c

" over 14 " 20, " 45c

" " 20 " 30, " 49c

" " 30 " 40, " 45c

" " 40 in. 50c

LOW BRASS.

Four cents ₩ lb more than High Brass

Gilding Metal, 8c ₩ lb more than High Brass.

Platers' or Gold Metal: In Bars 48c; Sawed 51c; Planed or Polished 54c

FOR SLITTING.

Metal, in width 1 in. to ⅛ in. to No. 28, inclusive, 1c ₩ lb advance.

Metal, in width 2 in. to 1 in thinner than No. 28, 2c ₩ lb advance.

Metal, in width 1 in. to ⅛ in. thinner than No. 28, 3c ₩ lb advance

Metal in width ⅛ in. to ¼, inclusive, not thinner than No. 28, 3c ₩ lb advance.

Metal in width ⅛ in. to ¼ thinner than No. 28, 5c ₩ lb advance.

Metal, ¼ in. in width and less, 10c ₩ lb advance.

Any of the above widths cut to particular lengths, add 7c ₩ lb.

GERMAN SILVER MARKET METAL AND WIRE.

	Market Metal.	Wire
1 per cent., 12 inch to No. 26	$c.52	$c.75
5 " " "	.56	.76
8 " " "	.64	.88
5 " " "	.74	L.13
8 " " "	.85	L.12

German Silver Sheets over 12 in. wide and weighing more than 12 lb., $2 ₩ lb.

Advance 2c. for each additional inch in width above 12 in. and 2c. ₩ lb on each No. thinner than Nos. 26 to 12, inclusive.

All German Silver thinner that No. 36 is Platers', at 40c. ₩ lb additional.

German Silver Scrap, one-half less than net price of 12 in. Market Metal. German Silver Turnings, Filings and Chips, half the price of Scrap.

BRASS AND COPPER WIRE.

	High Brass.	Low Brass.	Gild'g and Copper.
No. 0 to 20	$0.33	$0.37	$0.46
No. 21	.36	.40	.46
No. 22	.37	.41	.47
No. 23	.38	.42	.48
No. 24	.40	.44	.50
No. 25	.43	.47	.53
No. 26	.48	.52	.58
No. 27	.48	.52	.58
No. 28	.52	.56	.63
No. 29	.55	.60	.66
No. 30	.63	.62	.72
No. 31	.62	.66	.78
No. 32	.66	.70	.84
No. 33	.70	.74	.93
No. 34	.74	.78	1.03

Spring Wire 2c ₩ lb advance

Flat Square and Half-Round Wire 5c ₩ lb advance on Round Wire.

Fancy Wire not less than 10c ₩ lb advance on Round Wire.

Brass Rods, No. 8 and larger, not less than 2 feet lengths, 48c.

Wire straightened and cut smaller than No. 8 and not less than 2 feet lengths, 43c.

Wire and Rods less than 2 feet lengths, special rates.

Twelve cents per lb extra for spooling on 1 lb spools No 36.

MISCELLANEOUS.

Brass Pail Ears $0.45

Brass Door Rail .43

SCRAP.—Net.

High Brass Scrap 13c

Low Brass Scrap 10c

Gilding 16c

Turnings, Filings and Chips call the price of Scrap.

Terms—Net cash. Interest to be added after thirty days.

TUBING.—dis. 30 ℅.

	₩ lb
Plain to No 20 inclusive above ¼ in. to 3 in.	$0.42
Plain above 3 in.	.53
Nos 21, 22, 23, two cents advance on List for each Number.	
Nos. 24, 25, 26, four cents advance on List for each Number.	
All Sizes No. 26, special rates.	
Plain, ¼ inch	78
Plain, 3-16 inch	1.10
Plain, ⅛ inch	1.00
All Mandrel Drawn Tubes, 5 cents advance on List Prices.	
Fancy Tubing to No. 20	95
English, Scotch and Extra Patterns Fancy Tubing to No. 20	55
Tubing Sawed or Cut 2 to 4 feet long, 2 cents advance on List	
Add two cents, ½ cent for each additional cutting under 2 feet.	
All Mandrel Drawn Tubes under 25 in. ⅝ c ₩ lb advance.	

ZINC TUBING—dis. 25 ℅.

Plain	27
Fancy	33
Scotch and Extra Patterns	36

GERMAN SILVER TUBING.—dis 25 ℅.

4 Per cent	.80
6 Per cent	.90
9 Per cent	1.00
12 Per cent	1.20
15 Per cent	1.34
18 Per cent	1.45
21 Per cent	1.50
25 Per cent	1.60

STEEL.—DUTY: Ingots, Bars, Sheets, &c., valued at 4 c ₩ lb or less, 45 ℅ ad val. Valued above 4 c and not above 7 c ₩ lb, 2 c ₩ lb; valued above 7 c and not above 10 c ₩ lb, 2¾ c ₩ lb; valued above 10 c ₩ lb, 3½ c ₩ lb. *Extras.* Steel bars, rods, &c., cold hammered or polished, in any way in addition to ordinary hot rolling, ¼ c ₩ lb in addition to above. Steel Circular Saw Plates, 1 c ₩ lb in addition to the above.

American Cast Steel.

For American Steel see quotations under heading of Pittsburgh.

English Steel.

Best Cast	₩ lb 15½c
Extra Cast	₩ lb 16½c
Circular Saw Plates	₩ lb 16c
Round Machinery, Cast	₩ lb 10c
Swaged, Cast	₩ lb 18c
Best Double Shear	₩ lb 15½
Blister, 1st quality	₩ lb 13c
German Steel, Best	₩ lb 11c
2d quality	₩ lb 10c
3d quality	₩ lb 9c
Sheet Cast Steel, 1st quality	₩ lb 15½c
2d quality	₩ lb 14½c
3d quality	₩ lb 12½c

ANTIMONY See Trade Report

LEAD.—DUTY: Pig, $2 ₩ 100 lb Old Lead, 2c ₩ lb

Pipe and Sheet, 3c ₩ lb.	
American	4½ @ 4¾c
Bar	.0c
Pipe	6¾c, dis 10 ℅
Tin Lined Pipe	11c, dis 10 ℅
Sheet	7½c, dis 10 ℅
Shot	Drop 7c, Buck. 8c
Chilled Shot	.8c

BABBITT METAL.

N. P. U. ₩ lb 8c

A. 28c; B. 27c; C. 1c.

TIN.—DUTY: Plates Sheets Tagger and Terne, 1c ₩ lb; Bars, Block and Pigs free.

Banca	₩ lb 23½c
Straits	₩ lb 22½c
English	₩ lb 23 c

TIN PLATES.

I C 10X14 / I C 14X20	Prime Charcoal	$6.25 @ 6.75
Second quality		$5.87½ @ 6.25
I C 12X12	Prime Charcoal	6.50
I X 10X14 / I X 14X20	Prime Charcoal	7.75 @ 8.00
Second quality		$7.25 @ 7.40
I X 12X12	Prime Charcoal	6.25
D C 12½X17	Prime Charcoal	5.75
D X 12½X17	Prime Charcoal	7.25
For each additional X add		1.50

COKE TIN PLATE.

	Best.	Ordinary.
I C 10X14 / I C 14X20 / I C 12X12	$5.50	$5.15 @ 5.40
	5.75	5.40 @ 5.50

TERNE PLATE.

	Prime Char.	2d Qual.	Coke.
I C 14X20	$5.50 @ 5.62½	5.25	5.12½
I X 14X20	7.25 @ 7.50	....	....
I C 20X28	10.75 @ 11.25	10.50	10.00 @ 10.25
I X 20X28	14.00	....	....
I C 20X200	11.50	....	....
I C 14X20 M. F. Brand			$7.75

SOLDER—⅓ & ½ 15c

Extra 13½c

No. 1 12 c

SPELTER.—DUTY: in Pigs, Bars and Plates, $1.50 ₩ 100 lb.

American, cash	5.00 @ 5.25

ZINC.—DUTY: Pig or Block, $1.50 ₩ 100 lb: Sheet 2½c ₩ lb.

Sheet, Cask	6½ @ 6¾c
Sheet, Open	6¾ @ 70

Paper Stock, &c.

(Dealers' Selling Prices.)

	Cents ₩ lb
White Shirt Cuttings No. 1	7 @ 7¼
White Shirt Cuttings, No. 2	6¾ @ 6¾
Mill Assorted Whites	5¼ @ 5¾
Unbleached Muslins	6¼ @ 6½
City Whites, No. 1	4½ @ 4¾
New Canton Flannels	@ 6½
New Seconds light	3¼ @ 3¾
New Seconds dark	2¾ @ 3
No. 2 Whites	2¾ @ 2¾
Cotton Canvas	4½ @ 4¾
Linen Canvas, No. 1	4½ @ 4¾
Seconds, City No. 1	1¾ @ 1¾
Seconds, City No. 2	1 @ 1¼
Colors, per cwt	70 @ @
Manila Rope	3¾
Manila Rope, Tarred	2½ @ 2¾
Gunny Bagging, No. 1	1¾ @ 2
Gunny Bagging, No. 2	1½ @ 1¾
Kentucky Bagging	4½ @ 4¾
Burlap Bagging, No. 1	2¼ @ 2½
Tar Shakings	2 @ 2¼
Hemp Twine Stock	4¼ @ 4½
Hard White Shavings, No. 1	4 @ 4¼
Soft White Shavings, No. 1	3¼ @ 3½
White Shavings, No. 2, soft	3 @ 3
Mixed Shavings, part white	2½ @ 2¾
Ledger and Writing	3 @ 3¼
Solid Stock	2½ @ 2¾
Book Stock, No. 1, light	1¾ @ 1¾
Old Newspapers	1½ @ 1¾
Pure Manilas	1¾ @ 2
Bogus Manilas and Hardwares	⅝ @ 1
Commons per 100 lbs	60 @ 70
Binders' Board Cuttings	⅞ @ 1
Straw Board Cuttings per cwt	70 @ 75

Paints, Oils, &c.

Paints.

Black Lamp, Coach Painters	₩ lb 22 @ 24c
Black Lamp, Ordinary	₩ lb 0c
Black Ivory Drop, fair	12 @ 15c
Black Ivory Drop, best	23c
Black Paint, in oil	kegs 8c; asst'd cans, 11c
Blue Prussian, fair to best	40 @ 55c
Blue Prussian, fair to best, in oil	45 @ 55c
Blue Chinese dry	70c
Blue Ultramarine	18 @ 30c
Brown, Spanish	14c
Brown, Van Dyke	10 @ 12c
Green, Chrome	15 @ 23c
Green, Chrome, in oil	14 @ 18 @ 24c
Green, Paris	good, 20c; best, 25c
Green, Paris, in oil	good, 30c; best, 35c
Iron Paint, Bright Red	₩ lb 2½c
Iron Paint, Brown	₩ lb 1½c
Iron Paint, Purple	₩ lb 3 c
Iron Paint, Ground in oil, Bright Red	₩ lb 6½c
Iron Paint, Ground in oil, Red	₩ lb 5½c
Iron Paint, Ground in oil, Brown	₩ lb 5½c
Iron Paint, Ground in oil, Purple	₩ lb 6 c
Mineral Paints	2 @ 4c
Orange Mineral	10c
Red Lead, American	7c
Red Venetian (Eng.) dry	$1.65 @ $1.75
Red Venetian, in oil	asst'd cans, 11c; kegs, 8c
Red Indian dry	9 @ 12c
Rose Pink	10 @ 15c
Sienna, American, Raw, powdered	4c
Sienna, Burnt, powdered	15c
Sienna, Burnt, in oil	10 @ 15 @ 20c
Sienna, Raw	11 @ 15 @ 25c
Umber, Burnt, powdered	4 @ 8c
Umber, Burnt, in oil	9 @ 12 @ 15c
Umber, Raw, powdered	3½ @ 7½c
Umber, Raw, in oil	10 @ 15 @ 48c
Vermilion, Chinese	90c
Vermilion, English	45 @ 48c
Vermilion American, Common	15c
White Lead, American, pure dry	6½ @ 6¾c
White Lead, American, pure in oil	6¾ @ 7c
White, Paris, English, prime	in bbls. 2 @ 2 c
Yellow Ochre, French	$1.75
Yellow Ochre, French, in oil	asst'd cans, 11c; kegs, 8c
Yellow Ochre, Vermont	in casks, 13c
Yellow Chrome	17 @ 27c
Yellow Chrome, in oil	14 @ 18 @ 25c
Zinc White, American No. 1, dry	7 @ 8c
Zinc White, American No. 1, in oil	9c
Zinc White, French (Paris) dry	8 @ 10c
Zinc White, French, in oil	10 @ 11c

Oils.

Linseed Raw, in casks and bbls	56 @ 57c
Linseed Boiled, in casks and bbls	59 @ 60c
Linseed, Calcutta	58 @ 59c
Bleached Whale	₩ gal. 65c
Bleached Sperm	₩ gal. $1.22
Bleached Elephant	72c
Signal	80c
Prime Lard	66c
No. 1 Extra	61c
West Virginia	8c @ 14c
Drilling	40c
Miners' Oil	40c @ 42c
Fish Oil, pressed	40c @ 42c
Neatsfoot	75 @ 85c
Tallow	70c @ 75c
Empire Cylinder Oil	65c
Machinery	40c
Engine	40c

Sundries.

Asphaltum Cuban	6½c @ 9½c
Asphaltum Egyptian	9c @ 10c
Benzine	₩ gal. 8c @ 10c
Chalk	3½c
Chalk, Block	3½c
Dryers Patent Am'n	asst'd casks, or kegs 7c
Frostings	4 @ 5
Glue, White	24 @ 35c
Glue, Sheet	20c
Glaziers' Points, Zinc	8c
Gum, Copal	36c
Gum, Damar	24c
Gum Shellac, English	40c
Gum Shellac, English, dark	35c
Litharge	7½c
Mineral Wool, ordinary	₩ lb 1 @ 1½c
Mineral Wool, extra	₩ lb 3 @ 3½c
Pumice Stone, selected Lumps	4 @ 6c
Pumice Stone, Powdered	2½c
Pine Tar, bbls	$2.75
Pitch	$1.90
Putty, in bladders	3c
Putty, in bulk	2½c
Rosin—Common and Good—Strained	$1.0c
E & F	$2.10 @ $2.20
G & H	$2.30 @ $2.50
I & K	$2.60 @ $2.80
M & N	$3.00 @ $3.25
Spirits Turpentine	41½ @ 42½c
Whiting Spanish	85c
Waste, No. 1 Cop	10c
Waste, No. 1 White Machine	10c
Waste, No. 2 White Machine	9½c
Waste, No. 1 Colored	7c
Waste, No. 2 Colored	6½
Waste Washed Machine	6

Glass.

Prices current per box of 50 feet.
List, July 2, 1883.

Single.

SIZES.	1st.	2d.	3d.	4th.
6 x 8 to 10 x 15	$13.50	$11.50	$10.75	$10.25
11 x 14 to 16 x 24	14.50	13.50	12.50	11.50
18 x 22 to 20 x 30	18.50	17.00	15.50	14.00
15 x 36 to 24 x 30	20.50	18.50	16.25	
26 x 28 to 24 x 36	22.00	20.50	17.50	
26 x 36 to 26 x 44	24.00	22.00	18.50	
26 x 46 to 30 x 50	26.00	24.00	20.50	
30 x 52 to 30 x 54	27.00	25.00	21.50	
30 x 56 to 34 x 56	29.00	27.00	24.00	
34 x 58 to 34 x 60	31.00	29.00	26.00	
36 x 60 to 40 x 60	35.00	31.00	29.00	

Double.

SIZES.	1st.	2d.	3d.	4th.
6 x 8 to 10 x 15	$17.50	$15.00	$14.00	$13.00
11 x 14 to 16 x 24	20.00	18.00	16.50	
18 x 22 to 20 x 30	24.00	22.00	20.00	
15 x 36 to 24 x 30	26.50	24.00	21.00	
26 x 28 to 24 x 36	29.00	26.00	23.00	
26 x 36 to 26 x 44	30.00	28.00	24.00	
26 x 46 to 30 x 50	33.00	31.00	27.00	
30 x 52 to 30 x 54	35.00	32.00	28.00	
30 x 56 to 34 x 56	37.00	34.00	30.00	
34 x 58 to 34 x 60	40.00	37.00	34.00	
36 x 60 to 40 x 60	43.00	40.00	37.00	

Sizes above—$15 per box extra for every 5 inch s. An additional 10 per cent. will be charged for all Glass more than 40 inches wide. All sizes above 52 inches in length, and not making more than 84 united inches, will be charged in the united 84 inches bracket Discount, 70 and 10.

Duty on Steel Blooms.

A telegram from Chicago, which evidently needs a little explanation, has appeared in the daily papers. It evidently refers to importations made under the old tariff, as the present duty on "tire ingots or blooms" is 2 cents per pound under a specific provision of the law. Under the old tariff law the claim was made that they were entitled to admission at the rate of 30 per cent., and when the Treasury Department decided that the rate applicable was 45 per cent, the importers paid the higher duty under protest. Hence the suit for refund, which is referred to in the telegram as follows:

CHICAGO, Ill., August 17.—Attorneys for the Chicago Tire Mfg. Co. began a suit in the United States Circuit Court to-day to determine the rate at which steel blooms are to be taxed at the custom hou e. Blooms, either steel or iron, are ingots partly prepared for manufacturing purposes, and are liable to either one of two tariffs. One, as manufactured material, is 45 per cent. ad valorem, and the other, under the list of "articles not otherwise provided for," is 30 per cent. of the valuation. The question has been frequently referred to the Treasury Department, which uniformly decided in favor of the high tariff, but it is thought that the court will take a different view of the case and lean to the importer when the question is doubtful. The suit is against Jesse Spalding, as Collector of the Port of Chicago, and is nominally to recover $3000 damages on $14,000 worth of steel blooms suitable for the manufacture of locomotive tires, which were recently imported from England by the plaintiffs and taxed here at 45 per cent. ad valorem.

The Lighthouse Service.

The lighthouse service is an interesting branch of the public service, under the supervision of the Treasury, which, like some other bureaus, makes but little display in the newspapers, and yet is of the highest degree of usefulness and importance. The service is under the immediate control of the Lighthouse Board, which has jurisdiction of all the aids to navigation in American waters. The board is composed of three officers of the navy, including the vice-admiral, three officers of the Corps of Engineers of the army, headed by the chief himself, and three civilians, who are the Secretary of the Treasury, who is *ex officio* the president of the board, the Superintendent of the Coast and Geodetic Survey for the time being, and a scientist learned in the laws of light and sound.

Our coasts are divided into 14 lighthouse districts, and over each is an inspector, who is an officer of the navy, and an engineer, who is an officer of the Corps of Engineers of the army. The Atlantic coast has six of these districts, the Gulf of Mexico two, the Great Lakes two, and the Mississippi, Missouri and Ohio rivers have two more. The lights on Delaware River and bay are in the fourth district, which extends from Squan Inlet, N. J., to Metonkin Inlet, Va., and covers the seacoast of New Jersey below the Highlands of Navesink, the bay shores of New Jersey and Delaware, the seacoasts of Delaware and Maryland, and part of the seacoast of Virginia. The inspector of each district has charge of the keepers of the light stations, their subsistence and discipline, and it is his duty to inspect, personally, each of the lighthouses and lightships in his district every quarter, and to make report as to their condition to the home office in Washington.

Our lighthouse establishment is a growth rather than a creation. It was commenced in Colonial times by the erection in 1715–16 of a beacon at the entrance of Boston Harbor. The present board was created in 1852. Then there were 325 lighthouses, such as they were; now there are 725, and some among them the best of the kind in the world, besides nearly 900 stake lights on the Western rivers; then there were 35 lightships, now there are but 30, and the board is trying to replace them with lighthouses; there were also but few beacons and buoys and no fog signals, while now we have about 3400 buoys, 345 day or unlighted beacons and about 70 fog signals. This service is supported by direct appropriation by Congress. Last year $2,084,000 was provided for the maintenance of the service, and about $300,000 for the erection of new buildings, of which last sum about a quarter was spent in Delaware Bay.

Steel Nails.

The appearance of steel nails in the nail trade within the past few months has attracted considerable attention, and the possibilities of the new article are variously speculated upon. Some are of the opinion, despite all assertions to the contrary, that they cannot be made as cheaply as iron nails, and, not being superior to the latter for ordinary purposes, the cost of production will effectually prevent a wide introduction of them. The view is combated by the friends of the new article, who insist that they can be made as cheaply, if not more cheaply, than iron nails, and will be generally preferred to the latter—in short, that they are the coming nail. Steel nails have been placed upon the market only in small quantities as yet. In the East, where they were introduced about a year ago, quite a liberal demand for them has sprung up, and, according to the Boston *Commercial Bulletin*, all the leading nail companies of Massachusetts now produce them regularly. In the West they have sold only in a small way.

As yet their manufacture has been carried on as merely an incidental business, no mill in the country having engaged exclusively in the manufacture of them. They are produced in conjunction with iron nails from steel bought in the market. Late last summer or early last fall, however, a movement was set on foot in the Wheeling district, Pennsylvania, looking to the formation of a syndicate and the building of steel works for the production of soft steel for nail plate. There were eight nail mills and seven nail firms represented in the organization which followed, and the understanding was that works should be erected with a capacity of 500,000 tons of low carbon steel per annum. Each of the mills represented in the syndicate was to receive a certain part of each day's output of steel, to be determined by the number of machines employed in the mill. Each mill was also to contribute pig iron to the steel works according to its capacity, and in purchasing the output of the steel works the mills were to allow the syndicate a small profit on the cost of manufacture—something like $1 a ton—but, of course, the mill owners were to get this finally in the shape of dividends. The syndicate seemed for a time to be an established fact, and it was reported that it had begun to negotiate for machinery and would break ground for the new steel works January 1, 1883. But trouble arose among the members over the question as to whether the smaller mills should be allowed to increase their capacities (as was desired by their owners in the event that steel nails should prove to be a commercial success), and upon this question the syndicate divided and finally went to pieces. But the work undertaken by the syndicate has not been entirely abandoned, for at this time two leading Wheeling nail mills are already committed to the work of erecting complete steel-nail plants, including converters and so on, and another has the matter under consideration. Steel nails, when compared with iron nails, are found to be much smoother on their surfaces and of a lighter color. In driving them into hard wood it will also be discovered that they are very much stronger than the latter, being less liable to bend, and yet capable of being greatly bent without fracture. These qualities will, it is thought, enable a lighter steel nail to answer the same purpose as an iron nail of nominally the same size, and therefore cheapen the cost of such nails to the consumers.

NEW PUBLICATIONS.

THE TARIFF LAWS OF THE UNITED STATES. By Charles F. Williams. Published by Messrs. Soule & Bugbee. Size, 6 x 9½ inches; 193 pages.

The above work by Mr. Williams will be found of considerable interest and value in many quarters. The author has had exceptional facilities for the work, and has endeavored to assist in determining in advance many questions likely to arise in administering the new law. To this end, as inspection of the work will show, the sections of the old law have been brought forward into just a position with those of the new law to which they correspond or bear an analogy, in such a manner that the changes are readily apparent. This method is undoubtedly preferable to reproducing the former law in its entirety, as it can be seen at a glance which paragraphs remain unchanged. An attempt has also been made to state by reference to and citations and abstracts from the opinions of the courts and of the department all that has been decided and that has any practical bearing upon the interpretation of the law and of questions of classification. The various decisions which have thus far been rendered have been carefully analyzed, and the results are so stated as to present as clear as may be both the rulings and the principles underlying them. Decisions which have been overruled by later ones, or superseded by changes in the law, or which are too trivial to be of general interest, have not been referred to unless for special reasons. Considerable care has been taken in the preparation of the work, and it cannot but be of material assistance in simplifying and elucidating a subject which is usually deemed unsatisfactory, technical and obscure.

POCKET MANUAL FOR ENGINEERS. By John W. Hill. Published by Wm. A. Harris. Size, 4½ x 6½ inches; 205 pages. Price, $1.25.

To those who have previously had occasion to apply the information given by Mr. Hill in his handbooks, it will scarcely be necessary to point out the many good features of the manual here considered. The various particulars are in such a shape as to give little difficulty to the average reader to thoroughly understand them, and wherever formulæ are employed they are of a simple character. Some pages of the work, if we mistake not, bear a striking resemblance to those of a smaller manual prepared by Mr. Hill a number of years ago, and, together with the additional matter embraced in the present work, will be found of considerable practical value. Interesting chapters are devoted to combustion, boiler explosions, explosions in flour mills, heat, friction, chimneys, furnaces and boilers, duty of pumping engines, and a large number of other subjects of equal interest and importance. The book is neatly bound, and the matter arranged in an attractive and easily accessible shape.

The executive committee appointed at the Trade and Labor Union Convention held at Buffalo last year has issued a call for a State convention to meet at Rochester on September 17. The convention is to be composed of delegates from trades and labor unions, Knights of Labor assemblies, trades councils, district assemblies and central bodies of trades and labor unions. The convention is called for the purpose of reviewing the action of the last Legislature on the bills submitted by the Workingmen's Assembly, to point out those who worked for and against those bills, and to agree upon a line of policy for the fall campaign.

Advices from St. John, N. B., under date of August 18, announce that the St. John Bridge Co. have contracted with the Dominion Bridge Co., of Montreal, for the construction of a bridge across the St. John River at the falls. This bridge and a short branch line will connect the Intercolonial Railroad with the United States system of railway. The work is to be finished by August, 1884. The bridge and approaches will be 650 feet long, and the main span will be 420 feet. The plans have been submitted to the Dominion Government, which grants a loan to aid the construction of the work.

The bondholders of the American Heat and Power Company, of this city, whose difficulties were so extensively commented upon during the past year, have commenced a foreclosure suit upon the property of the company, consisting chiefly of real estate and boiler-houses in Gold street, near Fulton, and of the pipes buried in the streets. About $600,000 are reported to have been sunk in the experiment, and it is now considered questionable by some whether the pipes and fixtures under ground could be given away, as they are not considered worth the expense of digging them up and keeping the streets in repair for one year, according to law. As to the property in Gold street, the plot was bought some two years since from the Astor estate, and a mortgage given of $75,000 in part payment. Judges of real estate estimate that the property is not worth more than $75,000, so that it will revert to the Astor estate. The sale of the plant under ground and the fixtures, tools, boilers, &c., in the Gold street buildings will, it is thought, bring enough money to pay the outstanding debts of the company, the stockholders and bondholders losing all of the $600,000 invested.

The Board of Commissioners of the Croton Aqueduct recently met in this city and its organization was completed. Mr. Isaac Newton, the chief engineer of the Croton Aqueduct, presented a report and plans for a new aqueduct from the high dam at Quaker Bridge to the city, mainly by tunnel to and under the Harlem River; thence by tunnel, except in the Manhattan Valley, where pipes shall be used, to the reservoir. The cost of this plan will be about $14,000,000. In addition to this, plans were presented for a trial branch line from Tarrytown to Croton Lake, as requested by the commission.

The largest pumps to be driven by windmills ever made in this country have just been shipped to Brazil by A. J. Corcoran, the manufacturer. They are three in number, all of brass, to resist the corrosion of sea water, and are to be used in the manufacture of salt. Each has a cylinder 14 inches diameter and a stroke of 20 inches, and when run at full speed will discharge nearly 1900 gallons per minute. The main shaft which works these pumps is made of wrought iron and is 4 inches square. If the business proves profitable a number of others will be forwarded from this city.

During the last few weeks the Wilson Mfg. Co., of New London, Conn., have been increasing their steam-power and otherwise adding to their facilities for turning out work promptly and satisfactorily. Their works commenced running again on the 14th inst. This house is one of the oldest and best known among the makers of hardware, and we are pleased to record these evidences of their prosperity.

New York Wholesale Prices, August 22, 1883.

(For Wholesale Metal Prices See Page 29.)

HARDWARE.

Anvils.
Eagle Anvils American ... ⅌ ℔ 10c—dis 20 %
Wright's ... 11c @ 11½c
Armitage's Mouse Hole ... 9½c @ 9¾c
Armitage's Mouse Hole (extra quality) ... 11½
Trenton ... 10½c
Wilkinson's ... 10½c

Anvil Vise and Drill.
Millers Falls Co., $18.00 ... dis 20 %
Cheney Anvil and Vise ... dis 33⅓ %

Augers and Bits.
Conn. Valley Mfg. Co.; Douglass Mfg. Co.; C. E. Jennings & Co.; Humphreysville Mfg. Co.; Ives; Beecher (French, Swift & Co.); Griswold; Nobles Mfg. Co.; Snell Mfg. } dis 50@55 % from list of Jan. 7, 1880.
Watrous & Co. Extension Lip ... dis 35 %
Cook's Douglass Mfg. Co ... dis 40&10 %
Patent Solid Head ... dis 30 %
Lewis' Patent Single Twist ... dis 45 %
Russell Jennings' Auger, Dowel, Machine-Dowel and Hand Rail Bits ... dis 10&10&10 %
Russell Jennings' Augers ... dis 16⅔&10&10&10 %
Russell Jennings' Car and Machine Bits, Boring-Machine and Millwrights' Augers ... dis 25&10&10&10 %
Imitation Jennings' Bits ... dis 50 %
Ives' "Jennings'" Bits ... dis 40&10 %
Snell Mfg. Co.'s Jennings' Bits ... dis 40 %
Expansive Bits, Clark's, small, $18; large, $26 .. dis 25 %
Expansive Bits, Ives' ... $20 @ $30—dis 33⅓&10 %
Expansive Bits, Blake's ... $20—dis 40 %
Expansive Bits, Derby, $17 and $26 ... dis 40 %
Hollow Augers, Ives; Hollow Augers, French, Swift & Co. } dis 25 %
Hollow Augers, Douglass' ... 25 %
Hollow Augers, Bonney's Adjust. ⅌ dz. $48—dis 25&10 %
Hollow Augers, Stearns' Adjust. ⅌ dz. $48—dis 20&10 %
Hollow Augers, Ives' Expansive, each $4.50—dis 30&10 %
Hollow Augers, Universal Expan., each $4.50—dis 20 %
Wood's ... dis 25 %
Gimlet Bits ... $7.50 ⅌ gross, dis 50 %
Gimlet Bits, Diamond ... ⅌ doz. $1.10, dis 25&10 %
Gimlet Bits "Bee" ... dis 25 %
Double Cut Gimlet Bits, Shepardson's ... dis 45 %
Double Cut Gimlet Bits, Ct. Valley Mfg. Co. dis 20&10 %
Double Cut Gimlet Bits, Hartwell's ... dis 60 %
Double Cut Gimlet Bits, Douglass' ... dis 40 %
Double Cut Gimlet Bits, Ives' ... dis 50 %
Morse's Bit Stock Drill ... dis 25&10 %
Holtz Bit Stock Drills ... dis 25&10 %
L'Hommedieu's Ship Augers ... dis 15 %

Awl Hafts.
Sewing, Brass Ferrule ... $3.50 ⅌ gross—dis 40&10 %
Patent Sewing, Short ... $1.00 ⅌ doz.—dis 40&10 %
Patent Sewing, Long ... $1.20 ⅌ doz.—net
Patent Peg, Plain Top ... $10.00 ⅌ gross—dis 40&10 %
Patent Peg, Leather Top .. $12.00 ⅌ gross—dis 40&10 %

Awls, Brad Sets, &c.
Awls, Sewing, Common ... ⅌ gross $1.70—dis 25&10 %
Awls, Shouldered Peg ... ⅌ gross $2.45—dis 25&10 %
Awls, Patent Peg ... ⅌ gross 63c—dis 25&10 %
Awls, Shouldered Brad ... ⅌ gross $2.70—dis 25&10 %
Awls, Handled Brad ... $7.50 ⅌ gross—dis 25&10 %
Awls, Handled Scratch ... $7.50 ⅌ gross—dis 25&10 %
Awls, Socket Scratch ... $1.50 ⅌ gross—dis 10&10 %
Brad Sets, Aiken's ... ⅌ doz $10.00—dis 50&10 %
Millers Falls Adj. Tool Hdles ... ⅌ doz $12—dis 25 %
Brad Sets, No. 42, $10.50; No. 43, $12.50 ... dis 70&10&5 %
Brad Sets, Stanley's Excelsior, No. 1, $9.60 ... dis 30&10 %
Brad Sets, Stanley's Excelsior, No. 2, $1.80 ... dis 30&10 %
Brad Sets, Stanley's Excelsior, No. 3, $7.80 ... dis 30&10 %

Axes.
Single Bit, 4½ to 5½ and under ... ⅌ doz 8.00 net
Single Bit, 4½ to 6 and over ... ⅌ doz $8.50 net
Single Bit, beveled ... 50c ⅌ doz advance
Double Bit, 4½ to 5½ and under ... ⅌ doz $15.00 net
Double Bit, 4½ to 6 and over ... ⅌ doz $16.00 net
Double Bit, beveled ... $1.00 ⅌ doz advance

Axle Grease.
Frazer's ... ⅌ ℔ 6c

Axles.
Standard list ... dis 45 %

Balances.
Spring Balances ... dis 33⅓ %

Bells.
Hand, Light Brass ... dis 70 %
Hand, Extra Heavy ... dis 45 %
Hand, White Metal ... dis 60 %
Hand, Silver Chime ... dis 20&10 %
Hand, Globe (Cone's Patent) ... dis 25&10 %
Gong, Abbe's ... dis 20&10 %
Gong, Yankee ... dis 30&10 %
Gong, Barton's ... dis 30&10 %
Crank, Taylor's ... dis 25&10 %
Crank, Brooks' ... dis 50&10&2 %
Crank, Cone's ... dis 10 %
Crank, Connel's ... dis 15&10 %
Lever, Sargent's ... dis 55&10 %
Lever, Taylor's Bronzed or Plated ... net
Lever, Taylor's Japanned ... dis 25&10 %
Lever, R. & E. M. Co.'s ... dis 50&10&2 %
Lever, Reading ... dis 25&10&10 %
Pull, Brook's ... dis 50&10&2 %
Pull, Western ... dis 25&10 %
Call ... dis 25 %
Cow, Common Wrought ... dis 55&10 %
Cow, Western ... dis 20&10 %
Cow, Western, Sargent's new list ... dis 60&10&10 %
Cow, Kentucky "Star" ... dis 20&10 %
Cow, Kentucky Sargent's new list ... dis 60&10&10 %
Cow, Dodge' Genuine Kentucky, new list—
Nos. 0 1 1½ 4 5 6 Hog
$12.00 10.0 9.0 8.00 -.00 5.00 3.50 2.50 5.00 } dis 60 %
Cow, Texas Star ... dis 40&10 %

Bellows.
Blacksmiths Common ... dis 45 %
Blacksmiths' Extra Pittsburgh Pattern ... dis 20 %
Molders' ... dis 25 %
Hand Bellows ... dis 20 %

Belting, Rubber.
Belting and Packing Co ... dis 50 %

Bit Holders.
Extension, Barber's ... ⅌ doz $15.00—dis 40&5 %
Extension, Ives' ... ⅌ doz $15.00—dis 40 %
Diagonal ... ⅌ doz $24.00—dis 40 %
Angular ... ⅌ doz $24.00—dis 40&5 %

Blind Adjusters.—Domestic .. ⅌ doz $3.00—dis 30 %
Excelsior ... ⅌ doz $16.00—dis 50&10&2 %

Blind Fasteners.
Mackrell's ... ⅌ doz pairs, $1.00 dis 20&10 %
Van Sand's Screw Pattern ... $9 ⅌ gro. dis 10&2 %
Van Sand's Old Pattern ... $9 ⅌ gro. dis 10&2 %
Washburn's Old Pattern ... $9 ⅌ gro. net
Merriman's ... new list, net
Salisbury & Austin, No. 2008 ... $9 per gro. net
Security Gravity ... $9 per gross. net

Blind Staples.
Bar bed, ⅜ in. and larger ... ⅌ ℔ 9¾c net
Bar bed 5/16 in. ... ⅌ ℔ 11½c net

Blocks.
Penfield Block Co., I. R. and I. Strap'd ... New List, dis 40 %
Penfield Block Co., W. I. C. bushed ... New List, dis 40 %
Penfield Block Co., W. I. all steel roll'r ... New List, dis 20 %
Penfield Block Co., L. & I Sheaves ... New List, dis 20 %
Stanley Rule & Level Co.'s ... dis 40&10 %

Bolts.
Cast Iron Barrel Shutter, &c ... dis 55&10 %
Cast Iron Chain (Sargent's list) ... dis 65&10 %
Ives' Patent Door Bolts ... dis 55&10 %
Wrought Barrel ... dis 55&10 %
Wrought Square ... dis 55&10 %
Wrought Shutter, all Iron, Stanley's list ... dis 50&10 %
Wrought Shutter, Brass Knob, Stanley's list. dis 50&10 %
Wrought Shutter, Sargent's list ... dis 55&10 %
Wrought Sunk Flush, Sargent's ... dis 75&10 %
Wrought Sunk Flush, Stanley's ... dis 40&10 %
Wrought B. K. Flush, Com'n Stanley's ... dis 55&2½ %
Carriage and Tire Common ... dis 80&15 %
Carriage and Tire, Philadelphia, new list ... dis 70 %
Carriage and Tire, Philadelphia Pattern ... dis 70 %
Union Carriage ... dis 70 %
R. B. & W. Carriage (old list) ... dis 70 %
Tire, Am. Screw Co.'s, Phila., new list, July 2 1883 ... dis 80 %
Tire, "Bay State," new list, July 2, 1883 ... dis 65 %
Tire, R. B. & W., new list ... dis 75&10 %
Stove—American Screw Co.'s ... dis 40 %
Stove, R. B. & W. ... dis 45 %
Stove, R. & E. Mfg. Co ... dis 40 %
Plow ... dis 50 %
Plow, R. B. & Co. ... dis 45 %
Machine ... dis 65&10 %
Bolt Ends ... dis 60&10 %

Borax. ... 16c ⅌ ℔ net

Boring Machines. Upright / Angular
First quality, no Augers ... $5.50 / $6.75 .. dis 45@50 %
Philips, with Augers ... 7.00 / 7.50 ... net
Jennings & Co., no Augers ... 5.50 / 6.75 ... dis 40 %
Saunders' Patent, Regular Bed, $6.00 ... dis 20 %
Saunders' Patent, Extra Bed, $6.50 ... dis 20 %

Boxes.
Interchangeable Shelf Boxes ... dis 20 %

Braces.
Q. S. Backus ... dis 50&5 %
Barber's ... dis 40&5 %
Spofford's Patent ... dis 50&5 %
Ives' Patent Braces ... dis 55@55&5 %
Common Ball (American) ... dis 55 %
Amidon's ... dis 50 %
Barker's Imp'd ... dis 10 %
Empire ... dis 30 %
Buffalo Ball ... dis 40 %

Brackets.
Shelf, plain ... dis 50&10 %
Shelf, fancy ... dis 60&10 %
Reading, Plain ... dis 55&10 %
Reading, Rosette ... dis 60&5&10 %

Bright Wire Goods.
List of June 25, '83 ... dis 70&10&— %

Bull Rings.
Union Nut Co. ... dis 55 %
Sargent's ... dis 66⅔&10 %
Hotchkiss' low list ... dis 15 %
Humason, Beckley & Co.'s ... dis 66⅔&10 %
Peck, Stow & W. Co.'s ... dis 33⅓ & 10 %

Butts.
Wrought Brass ... dis 65&10&5 %
Cast Brass Tiebout's ... dis 33⅓ %
Cast Brass, Corbin's Fast Joint ... dis 20&10 %
Cast Brass, Loose Joint ... dis 10&10 %
Fast Joint Narrow ... dis 45&10&10 %
Fast Joint, Broad ... dis 45&10&10 %
Loose Joint ... dis 55&10&10 %
Loose Joint, Japanned ... dis 55&10&10 %
Loose Joint, Japanned with Acorns ... dis 55&10&10 %
Parliament Butts ... dis 55&10&10 %
Mayer's Hinges ... dis 60&10&10 %
Loose Pin, no Acorn ... dis 55&10&10 %
Loose Pin, Acorns ... dis 55&10&10 %
Loose Pin, Acorns, Japanned ... dis 60&10&10 %
Loose Pin, Acorns, Japanned, Plated Tips. dis 60&10&10 %

WROUGHT IRON.
Fast Joint, Narrow ... dis 50&10 %
Fast Joint, Lt. Narrow ... dis 50&10 %
Fast Joint, Broad ... dis 55&10 %
Loose Joint, Broad ... dis 55&10 %
Table Butts, Back Flaps, &c ... dis 50&10 %
Inside Blind Regular ... dis 50&10 %
Inside Blind, Light ... dis 50&10 %
Loose Pin, Wrt ... dis 55&10 %
Loose Pin, Light ... dis 50&10 %
Spring Hinges:
Geer's Spring and Blank Butts ... dis 25 %
Sabin Mfg. Co.'s Double Acting ... dis 35 %
Union Spiral Spring, Japanned ... dis 25 %
Union Spring Hinge Co.'s ... dis 25 %
American Spring Hinge Co.'s ... dis 30 %
Gem Spring Hinges ... dis 30 %
Barker's Double Acting ... dis 20 %
Union Mfg. Co ... dis 25 %
Bommer's ... dis 25 %
Buckman's ... dis 25 %
Empire ... dis 50&10 %
Acme ... dis 65&10 %
Climax ... dis 50&10 %
Blind Butts, Parker ... dis 70&2 %
Blind Butts, Palmer ... dis 50&10 %
Blind Butts, Seymour ... dis 70 %
Blind Butts, Lull & Porter ... dis 75&10 %
Blind Butts, Nicholson ... dis 45&10 %
Blind Butts, Huffer ... dis 50 %
Blind Butts, Clark's, Nos. 1, 3, 5 ... dis 70&2 %
Blind Butts, Sargent's, Nos. 1, 3 ... dis 66⅔&10 %
Blind Butts, Sargent's, No. 12 ... dis 70&10 %
Blind Butts, Reading's Gravity ... dis 66⅔&10 %
Blind Butts, Shepard's "Noiseless," Nos. 50, 60, 65, 45 and 55 ... dis 70 %
Blind Butts, Shepard's "Noiseless," Nos. 050 and 060 ... dis 70&10 %
Shepard's Lull & Porter Shutter Hinges ... dis 70&10 %
Shepard's Reversible Shutter Hinges ... dis 70&10 %
Clark's Improved Shutter Hinge, Nos 0, 1, 1½, 2, 2½, 3 ... dis 60&10 %

Bow Pins.
Humason, Beckley & Co.'s, Nos. 1 and 2 ... dis 60 %
Humason, Beckley & Co.'s other Nos ... dis 66⅔&10 %
Sargent & Co.'s ... $19.70 and $21.40, dis 66⅔&10 %
Hotchkiss ... dis 25 %
Peck, Stow & W. Co ... dis 50&10 %

Butcher's Cleavers.
Humason & Beckley Mfg. Co ... dis 25 %
Bradley's ... dis 25 %
Beatty's ... dis 25&5 %

1	2	3	4	5	6	7	8
$16.50	19.00	21.50	24.00	27.00	30.00	33.50	36.50

Calipers ... see Compasses
Can Openers.—Messenger's Comet, ⅌ doz, $3.00 ... dis 25 %
American ... ⅌ gross $6.00, dis 25@30 %
Duplex ... ⅌ doz 25c, dis 15@20 %
Lyman's ... ⅌ doz $3.75, dis 20 %
No. 4, French ... ⅌ doz $2.25, dis 55 %
No. 5, Iron Handle ... ⅌ gross $6.00, dis 25@30 %
Eureka ... ⅌ doz $2.50, dis 10 %
Sardine Scissors ... ⅌ doz $7.00, dis 55 %
Star ... ⅌ doz $5.00, dis 25&5 %
Sprague, No. 1, $2.00; No. 2, $2.25; No. 3, $2.50 ... dis 50&10 %
"Worlds Best" ⅌ gross, No. 1, $12.00; No. 2, $24.00; No. 3, $30.00 ... dis 50 & 10 %
Universal ... ⅌ doz $3.00, dis 35 %
Domestic ... ⅌ doz $2.50, dis 45 %
Champion ... ⅌ doz $2.00, dis 50 %

Caps—Percussion, ⅌ 1000.
Hicks & Goldmark's
F. L. Waterproof, 1-10's ... 50c
E. B. Trimmed Edge, 1-10's ... 65c
E. B. Ground Edge, Central Fire, 1-10's ... 70c
Double Waterproof, 1-10's ... $1.10
Pistol Waterproof, 1-10's ... 75c
Musket Waterproof, 1-10's ... 80c } dis 10&5 %
G. D. & S. B. ... 33c, dis 10 %
U. M. C., F. C. trimmed ... 50c
U. M. C., F. L. ground ... 70c } dis 10&10 %
U. M. C., Cen. fire ground ... 70c
U. M. C., Double W. Proof ... $1.40 } dis 10&5 %
Double Waterproof, in 1-10's ... $1.40
Colt's Pistol, in 1-10's ... 70c } dis 10 %
F. L. ... 50c
E. B. 1-10, trimmed ... 65c
E. B. 1-10, ground edge ... 70c } dis 10&5 %
Musket, in 1-10's ... 80c, dis 25 %

Cartridges.—Rim ... dis 70 %
Central Fire ... dis 45@50 %

Cards.—Horse and Curry ... dis 10 %
Cotton ... new list, Aug., '83 dis 10 %
Wool ... new list, Aug. '83 dis 10 %

Carpet Stretchers.
Cast Steel, Polished ... ⅌ doz $5.00, dis 30 %
Cast Iron, Steel Points ... ⅌ doz $2.00, dis 20&5 %
Socket ... ⅌ doz $2.50, dis 25 %
Bullard's ... dis 25 %

Casters.—Bed ... dis 45@50 %
Plate ... 45@50 %
Shallow Socket ... dis 35&10 %
Deep Socket ... dis 25&10 %
Martin's Patent (Phœnix) ... dis 25 %

Cattle Leaders.
Humason, Beckley & Co.'s ... dis 70&10 %
Sargent's ... dis 70&10 %
Hotchkiss ... dis 25 %
Peck, Stow & W. Co ... dis 33⅓&10 %

Chain.
Trace, 6½-10-2 ... ⅌ pair 79c
Trace, 6½-10-3 ... ⅌ pair 70c
Trace, 7-10-2 ... ⅌ pair 80c } dis 35 %
German Halter Chain, list of Dec. 31, 1881 ... dis 55 %
German Coil, list of Dec. 31, 1881 ... dis 55 %
Covert Halter, Hitching and Breast ... dis 35&5 %
Oneida Halter Chain (old list) ... dis 45 %
Galvanized Pump Chain ... ⅌ ℔ 9½c net
Jack Chain, Iron ... dis 60&10 %
Jack Chain, Brass ... dis 50&10 %

Chalk.
White ... ⅌ gross 60c net
Red ... ⅌ gross 80c net
Blue ... ⅌ gross $1.00 net
White Crayons ... ⅌ gross 10c net

Chalk Lines.—See Lines.

Chisels.
Socket Framing, Crossman ... dis 65&5 %
Socket Framing, Arlington Edge Tool Co ... dis 65&10 %
Socket Framing, Buck Bros ... 1876 list, dis 22½ %
Socket Framing, Merrill ... dis 65&10 %
Socket Framing, Witherby Tool Co ... dis 65&10 %
Socket Framing, Douglass' ... dis 65&10 %
Socket Firmers, Crossman ... dis 65&5 %
Socket Firmers, Arlington Edge Tool Co ... dis 65&10 %
Socket Firmers, Buck Bros ... dis 30 %
Socket Firmers, Merrill ... dis 65&10 %
Socket Firmers, Witherby Tool Co ... dis 65&10 %
Socket Firmers, Douglass' ... dis 65&10 %
Socket Corner ... dis 65&10 %
Tanged Firmers ... dis 40@45 %
Tanged Firmers, Butcher's ... $5.00@$5.25 to £
Tanged Firmers, Spear & Jackson's ... 5.00 to £
Tanged Firmers, Buck Bros (Shank) ... 5.25 to £
Globe Mfg. Co ... dis 65&10 %

Clamps.
Iron, Providence Tool Co.'s Wrt. Iron ... dis 25 %
Iron, Adjustable, Gray's ... dis 20 %
Iron, Adjustable, Lambert's ... dis 20 %
Iron, Adjustable, Snow's ... dis 40&5 %
Iron, Adjustable, Hammer's ... dis 15 %
Iron, Adjustable, Stearns' ... dis 20&10 %
Iron, Cabinet, Sargent's ... dis 70&10 %
Iron, Carriage Makers', Sargent's ... dis 65&10 %
Saw Clamps ... See Vises

Clips, Axle.
Norway or Best ... dis 60&5 %
Superior ... dis 60&5 %

Cockeyes. ... dis 55 %

Cocks, Brass.
Racking; Globe; Plain Bibbs; Ale and Beer } dis. ... 55 %

Coffee Mills.
Board and Box ... dis 50 %
Wilson's ... dis 50 %
Selsor's Pat ... $9.50, $10.50, dis 25 %
American (Enterprise Mfg. Co.) ... dis 20&10 %
The "Swift" (Lane Bros.) ... dis 20&10 %
Webb's Patent ... dis 45@50 %

Compasses, Dividers, &c.
Compasses ... dis 55 %
Callipers ... dis 55 %
Dividers ... dis 55 %
Bemis & Call Co.'s Dividers ... dis 60&5 %
Bemis & Call Co.'s Compasses and Callipers .. dis 50&5 %
Bemis & Call Co.'s Wing & inside or outside .. dis 50&5 %
Bemis & Call Co.'s Double ... dis 60 %
Bemis & Call Co.'s (Call's Patent Inside) ... dis 30 %
Excelsior ... dis 50 %
Cook's Extension ... dis 25 %
J. Stevens & Co's Callipers and Dividers ... dis 25&10 %

Coopers' Tools.
Bradley's ... dis 10 @ 20 %
Barton's ... dis 20 %

Corkscrews.—Humason & Beckly Mfg. Co dis 33⅓ %
Clough's Pat ... dis 33⅓ %

Corn Knives and Cutters.—Bradley's ... dis 10 %
Wadsworths ... dis 25 %

Crow Bars.
Cast Steel ... ⅌ ℔ 6½c
Iron, Steel Points ... ⅌ ℔ 5 c

Curling Irons, &c.
⅝, ¾, ⅞ in., $1.80, 2.00, 2.40 ... dis 10 %
Curling Tongs ... ⅌ doz $2.65, dis 10 %
Pinching Irons ... ⅌ doz $7.50, dis 20 %

Curry Combs.
Fitch's ... dis 50&10 %
Hotchkiss, Novelty, new list, July 1880 ... dis 25 %
Hotchkiss, Excl. Supr. Champion ... dis 25 %
Rubber ... ⅌ doz $10.00, dis 25 %

Curtain Pins.
Silvered Glass ... net
White Enamel ... net

Cutlery.
Meriden Cutlery Co. (Table) ... net
Am. Miller Bro.'s Cutlery Co ... dis 25 %
Humason & Beckley, Pocket ... dis 33⅓ %
Sangatuck Cutlery Co ... list net
Aaron Burkinshaw's Pocket ... dis 25 %

Dividers ... see Compasses

Dog Collars.—Embossed Gilt ... dis 30&10 %
Leather ... dis 40 %
Brass ... dis 40 %

Door Springs.
Torrey's Rod, regular size, ⅌ doz., $3 ... dis 50 %
Gray's Rod ... dis 15 %
Bee Rod ... dis 15 %
Warner's ... dis 30 %
Gem (Coil):
No. 1, Large Japanned ... ⅌ doz $4.00
No. 2, Medium, Japanned ... ⅌ doz 2.75
No. 3, Small, Japanned ... ⅌ doz 2.00 } dis 50 & 10 %
Star (Coil)—For Cop'd, Nickel-Plated &c., see list.
No. 4 ("Shoo Fly") Screen door size, ⅌ doz $1.50
No. 5, Screen Door size ... ⅌ doz 2.00
No. 6, Medium ... ⅌ doz 2.75
No. 7, Large ... ⅌ doz 4.00 } dis 60 %
Sabin's Lever .. No. 1, $1; 2, $1.50; 3, $2; 4, $2.50 . dis 35 %
Sabin's Boss. No. 1, ⅌ doz. $4.00; 2 $2.75; 3, $2. dis 33⅓ %
Sabin's Crown ... ⅌ doz $1.50, dis 33⅓ %
Philadelphia ... 5 in., $5.00; 8 in., $7.75, dis 35 %
Cowell's ... No. 1, ⅌ doz. $15.00; No. 2, $15.00, dis 50 %
Rubber, complete ... ⅌ doz. $1.80, dis 10 %
Hercules ... dis 50 %

Drawing Knives.
Arlington Edge Tool Co ... dis 65&10 %
Crossman's No. 1 ... dis 65&5 %
Morrill ... dis 65&10 %
Nobles Mfg. Co ... dis 15 %
Bradley's ... dis 35 %
Adjustable Handle ... dis 20 %
Witherby Tool Co ... dis 65&10 %
Douglass ... dis 65&10 %
Globe Mfg. Co ... dis 65&10 %

Drills and Drill Stocks.
Blacksmiths' ... each, $2.50, dis 10 %
Blacksmiths' Self-Feeding ... each, $7.50, dis 20 %
Breast, P. S. & W ... dis 20&10 %
Breast, Hotchkiss' ... dis 20 %
Breast, Wilson's ... dis 20 %
Breast, Millers Falls ... each, $3.00, dis 25 %
Breast, Bartholomew's ... each, $2.50, dis 25&10 %
Ratchet, Merrill's ... dis 10 %
Ratchet, Ingersoll's ... dis 25 %
Ratchet, Whitney's ... dis 20 %
Ratchet, Weston's ... dis 20 %
Ratchet, Moore's Triple Action ... dis 20&25 %
Whitney's Hand Drill, Plain, $11.00 Adjustable, $12.00 ... dis %
Wilson's Drill Stocks ... dis 10 %
Automatic Boring Tools ... each, $2.25, dis 20 %

Drill Chucks.
Morse's Beach Patent ... dis 30 %
Morse's Adjustable ... each, $10.00, dis 30 %
Danbury ... each, $8.00, dis 30 %

Egg Beaters.
Dover ... ⅌ doz. $2.50, dis 2 %
Monroe's ... dis 50 %
National ... ⅌ doz. $4.50, dis 33⅓ %
Standard ... ⅌ gross, $18.00, dis 25 %
Family (T. & S. Mfg. Co.) ... ⅌ gross, $18.00, net
Acme ... ⅌ gross, $12.00, dis 25 %
Triumph (T. & S. Mfg. Co.) ... ⅌ gross, $11.50, net

Elevator Buckets.
Mill E. Buckets, light, 3½ to 10 in. (Duc's Improved). ⅌ 100, $15.00 @ $51.00 ... dis 10 %
Mill E. Buckets, heavy 5 to 10 in. (Duc's Improved), ⅌ doz. $5.60 @ $10.20 ... dis 10 %
Storehouse (Duc's Patent), 12 to 17, $12 @ $20 ... dis 10 %

Emery and Emery Paper.
Regular numbers ... ⅌ ℔ 6c
Flour and F. F ... ⅌ ℔ 4c
B. & A. Emery Paper ... dis 30&5 %
Sibley's Emery and Crocus Cloth, large size, $10; medium, $10.50 ⅌ ream ... dis 15 %

Enameled and Tinned Ware.
Kettles ... dis 50 %
Sauce Pans ... dis 25 %
Tinned Sauce Pans ... dis 25 %

Escutcheon Pins.
Brass ... dis 50 %

Escutcheons.
Door Lock ... Same discounts as Door Locks
Brass Thread ... dis 55 %
Wood ... dis 25 %

Faucets.
Fenn's ... dis 40 %
Bohren's Patent Rubber Ball ... dis 25 %
Fenn's Cork Stops ... dis 33⅓ %
Star ... dis 55&10 %
Frary's Patent Petroleum ... dis 20&10 %
West's Patent Key ... dis 45 %
Anchor Lock ... dis 45 %
Metallic Key, Leather Lined ... dis 60 %
Cork Lined ... dis 70 %
J. Sommer's Best Metallic Key ... dis 40&10 %
J. Sommer's Cork Lined, 1st quality ... dis 50 %
Self-Measuring, Enterprise ... ⅌ doz. $30.00, dis 20&10 %
Self-Measuring, Lane's ... ⅌ doz. 36.00, dis 20&10 %
Self-Measuring, Victor ... ⅌ doz. $36.00, dis 25&10 %

Felloe Plates ... ⅌ ℔, 10c, dis 25 %

Files.
J. & Riley Carr ... new list April 1, '83, dis 15 %
J & Riley Carr Horse Rasps ... dis 10 %
Butcher's ...
Moss & Gamble ... new list, dis 15 %
H Disston & Sons ... dis 45 %
Nicholson ... dis 45 %
New American ... dis 45 %
Union File Co ... dis 45 %
Heller Bros.' Files ... dis 45 %
Heller Bros.' Horse Rasps ... dis 35 %
Western ... dis 45 %
Stubs ... new list, dis 25@30 %

Fluting Machines.
Knox, 4½-inch Rolls ... $3.50 each
Knox, 6-inch Rolls ... $4.00 each } dis 35 %
Eagle 3½ inch Roll ... $2.15, dis 35 %
Eagle, 5½-inch Roll ... 2.85, dis 35 %
Crown, 4½-in., $3.50; 6-in., $4.00; 8-in., $6.50 each, dis 35 %
Crown Jewel ... 6-in., $3.50 each, dis 35 %
American, 5-in., $3; 6-in., $3.40; 7-in., $4.50 each, dis 35 %
Domestic Fluter ... $1.50 each, net
Geneva Hand Fluter, White Metal ... ⅌ doz $12, dis 25 %
Crown Hand Fluter, Nos. 1, $15; 2, $12.50; 3, $10.00 ⅌ doz ... dis 30 %
Shepard Hand Fluter, No. 85 ... per doz $15, dis 30 %
Shepard Hand Fluter, No. 110 ... per doz $8.75, dis 30 %
Shepard Hand Fluter, No. 95 ... per doz $6.50, dis 20 %
Clark's Hand Fluter ... ⅌ doz $15.00, dis 33⅓ %
Combined Fluter and Sad Iron ... ⅌ doz $15.00, dis 30 %
Buffalo ... ⅌ doz $10.00, dis 10 %

Fluting Scissors ... dis 45 %

Fly Traps.
Paragon ... ⅌ doz, $3. net

Forks.
Hay, Manure and Spading ... dis 50 %
Plated, A 1, Rogers & Bro ... dis 40&10&5 %
Plated, Reed & Barton ... dis 40&10&5 %

Fruit and Jelly Presses.
Enterprise Mfg. Co ... dis 20&10 %

Fry Pans.
Burnished list as follows ... dis 60&10&5 %

No.	0	1	2	3	4	5	6	7	8
⅌ doz	$3.00	3.75	4.25	4.75	5.25	6.00	7.00	8.00	9.00

"Acme" ... dis 40&10 %

Gauges.
Marking Stanley's ... dis 50&10 %
Marking, Chapin's ... dis 55&10 %
Wire ... dis 70&10 %
Wire, Disston's ... dis 20 %
Wire, Wheeler, Madden & Co ... dis 10 %

Gimlets.
Nail and Spike ... dis 40&10 %
"Eureka" Gimlets ... dis 40&10 %
"Diamond" Gimlets ... dis 40&10 %
Double Cut, Shepardson's ... dis 40&10 %
Double Cut, Hartwell's ... dis 40&10 %
Double Cut, Ives' ... dis 40&10 %
Double Cut, Douglass' ... dis 40 %
"Bee" ... ⅌ gro. $12.00, dis 25 %

Glue Pots.
Tinned and Enameled ... dis 25&5 %
Family, Howe's "Eureka" ... dis 25 %
Family, L. F. & C.'s "Handy" ... dis 30 %

Grindstone Fixtures.
Sargents Patent ... dis 70&10 %
Reading Hardware Co ... dis 30&10 %

Gun Wads.
U. M. C. B. E., 11 up ... $2.00
U. M. C. B. E., 9&10 ... 2.30
U. M. C. B. E., 7&8 ... 2.60
U. M. C. P. E., 11 up ... 3.10
U. M. C. P. E., 9&10 ... 4.00
U. M. C. P. E., 7&8 ... 4.90 } dis 5&5 %

Halters.
Covert's Pat. Rope ... dis 50 %
Covert's Horse and Cattle Ties ... dis 50 %
Union Pat. Rope and Web ... dis 40&10 %
Union Horse and Cattle Ties ... dis 40&10 %

Hammers.
Maydole's ... dis 15 %
Cheney's, new list, March, 1883 ... dis 20&5 %
Hartford Hammer Co. (new list July 1, '81) ... dis 20 %
Humason & Beckley ... dis 15 %
Verree ... dis 5 %
Magnetic Tack, Nos. 1, 2, 3, $1.26, 1.50 and 1.75. dis 25&10 %
Nelson Tool Works ... dis 40&10 %
Warner & Noble's ... dis 5 %
Yerkes & Plumb ... dis 30 %
Wilkinson's Smiths' ... 11½c ⅌ ℔ net

Hand Cuffs and Leg Irons.
Providence Tool Co., Hand Cuffs, $15.00 ⅌ doz. dis 10 %
Providence Tool Co., Leg Irons, $25.00 ⅌ doz ... dis 10 %
Tower's ... dis 25 %

Handles.—Door or Thumb Latches.

Nos.	0	1	2	3	4
Per doz.	$0.80	1.00	1.18	1.35	1.50

... dis 60&10 %
Roggin's Latches ... ⅌ doz 35c. @ 40c. net
Bronze Iron Drop Latches ... ⅌ doz $0.90 @ 1.10
Jap'd Store Door Handles—Nuts, $1.62; Plate, $1.10; no Plate, $0.86 ... dis 10 %
Barn Door ... ⅌ doz $1.60, dis 10&10 %
Wrought Chest ... dis 70 %
Surface Chest ... dis 60&10 %
Flush Chest ... dis 70 %
Lifting ... dis 60&10 %
Saw and Plane ... dis 40&10 %
Boynton's Loop Saw Handles ... 50c. dis 50 %
Boynton's Centennial Saw Handles ... 30c. dis 25 %
Hammer and Hatchet ... dis 20 %
Bard Awl ... ⅌ gross, $1.00 dis 10 & 20 %

Hickory Firmer Chisel, assorted, ⅌ gross . $4.50
Hickory Firmer Chisel, large, ⅌ gross ... 5.00
Apple Firmer Chisel, assorted, ⅌ gross ... 5.00
Apple Firmer Chisel, large, ⅌ gross ... 6.00
Socket Firmer Chisel, assorted, ⅌ gross ... 3.00
Socket Framing Chisel, assorted, ⅌ gross .. 5.00
File assorted, ⅌ gross ... 2.75
Auger, assorted, ⅌ gross ... 5.00
Auger, large, ⅌ gross ... 7.00 } dis 20&10 @ 25&10
Patent Auger, Ives' ... dis 25 %
Patent Auger, Douglass' ... ⅌ set $1.25 net
Patent Auger, Swan's ... ⅌ set $1.00 net

Hangers.
Barn Door, old patterns ... dis 60&10 %
Barn Door, New England ... dis 65&10 %
Climax (Anti-Friction) ... dis 50 %
Challenge ... dis 50 %
"Champion" Medina Mfg. Co ... $15; dis 50&10 %
Sterling Improved (Anti Friction) ... dis 65&10 %
Cheritree ... dis 50 %
Kidder's ... dis 50&5 %
U. S. ... 4 in., $12; 5 in., $15; dis 60 %
The "Boss" ... dis 50&10 %
Terry's Patent ... 5 in., $12; 3½ in., $10; dis 40 %
Cronk ... No. 4, $12; No. 5, $14.40; No. 6, $21; dis 50

Harness Snaps.
Anchor (T. & S. Mfg. Co.) ... dis 60 %
Henshaw's, list of 1⅛ changed to $14.00 ... dis 60 %
Judd's, list of 1⅛ changed to $14.00 ... dis 60 @ 65 %
Fitch's (Bristol), list of 1⅛ change to $14.00 .. dis 60 @ 65 %
Hotchkiss' ... dis 10 %
Andrews' ... dis 50 %
Sargent's ... dis 70&10 %
German, low list, Sep., 1882 ... dis 33⅓ %
German, Sargent's new list ... dis 60&10 %
Covert ... dis 50 %
Covered Spring new list, Oct., 1882 ... dis 60&10 %
Union ... dis 50&10 %
Union Improved German ... dis 60&10 %

Hatchets.
Isaiah Blood ... dis 30 @ 35
Shingling, Nos. 1 2 3 ... ⅌ doz $7.25 $8.00 $8.75
Claw, Nos. 1 2 3 ... ⅌ doz 7.75 8.50 9.25
Lathing, Nos. 1 2 3 ... ⅌ doz 7.50 8.00 8.50
Hunt's ... dis 25 %
Shingling, Nos. 1 2 3 ... ⅌ doz $7.25 $8.00 $8.75
Claw, Nos. 1 2 3 ... ⅌ doz 7.75 8.50 9.25
Lathing, Nos. 1 2 3 ... ⅌ doz 7.30 8.25 9.00
Hurd's ... dis 30 @ 35 %
Shingling, Nos. 1 2 3 ... ⅌ doz $8.00 $8.50 $9.00
Claw, Nos. 1 2 3 ... ⅌ doz 9.00 9.50 10.00
Lathing, Nos. 1 2 3 ... ⅌ doz 8.00 8.50 9.00
Yerkes & Plumb ... dis 30 @ 35 %
Shingling, Nos. 1 2 2 ... ⅌ doz $7.50 $8.00 $8.50
Claw, Nos. 1 2 3 ... ⅌ doz 8.25 8.75 9.25
Lathing, Nos. 1 2 3 ... ⅌ doz 7.50 8.00 8.50
Simmons' ... dis 30 @ 35
Shingling, Nos. 0 1 2 3 ... ⅌ doz $7.50 $8.00 $8.50 $9.00
Claw, Nos. 0 1 2 3 ... ⅌ doz 8.50 9.00 9.50
Lathing, Nos. 0 1 2 3 ... ⅌ doz 8.00 8.50 9.00
Broad, Nos. 1 2 3 4 ... ⅌ doz 9.00 10.00 12.00 14.00
Broad, Nos. 5 6 7 8 ... ⅌ doz 16.00 18.00 20.00 22.00
Collins ... dis 10
Shingling, Nos. 1 2 3 ... ⅌ doz $5.50 $6.00 $6.50
Claw, Nos. 1 2 3 ... ⅌ doz 6.00 6.50 7.00
Lathing, Nos. 1 2 3 ... ⅌ doz 5.50 6.00 6.50
Peck's Champion Blade ... dis 30 @ 35 %
Shingling, Nos. 1 2 3 ... ⅌ doz $8.00 8.50 $9.00
Lath, Nos. 1 2 3 ... ⅌ doz 8.00 8.50 9.00
Claw, Nos. 1 2 3 ... ⅌ doz 9.00 9.50 10.00
Half, Nos. 1 2 3 ... ⅌ doz 8.00 8.50 9.00
Ax Pattern, Nos. 1 2 3 ... ⅌ doz 10.00 11.00 12.00

Hay Knives.
"Lightning" ... ⅌ doz $20.00 dis 10 %
Wadsworth's ... dis 33⅓ %

Hinges.
Gate, Western ... ⅌ doz $4.90 dis 55 %
Gate, N. E. ... ⅌ doz $7.70, dis 55 %
Gate, N. E. Reversible ... ⅌ doz $8.75, dis 55 %
Gate, Clark's, Nos. 1 2 3 ... dis 50 %
Gate, N. Y. State ... ⅌ doz $8.00, dis 55 %
Gate, Automatic ... ⅌ doz $12.50, dis 50 %
Gate, Common Sense ... ⅌ doz pair $4.50, dis 50 %
Gate, Seymour's ... dis 45&10 %
Gate, Shepard's ... Nos. 1, 2, 3, 10, 20 & 25, dis 50&10 %
Rolled Blind Hinges ... dis 60&10 %
Rolled Plate ... dis 60&10 %
Rolled Raised ... dis 60&10 %
Plate Hinges "Providence" { 8, 10 & 12 in., $5.55 ⅌ 100 ℔; over 12 in., $4.50 ⅌ 100 ℔ } .. dis 10 %
Screw Hook and Strap { 8, 10, 12 in., $7.00 ⅌ 100 ℔; 14 to 36 in. $5.75 ⅌ 100 ℔ } .. dis 10 %
Heavy Welded Hook { 8 to 12 in., $7.00 ⅌ 100 ℔; 14 in & up, $5.50 ⅌ 100 ℔ } dis 10 %
Screw Hook and Eye ... ⅞ & 1 in. 9c; ¾ in. 9c; ⅝ in. 10c; ½ in. 13c } dis 20 %
Wrought Strap and T ... dis 60&10&2 %

Hoes.
Riveted Shank ... ⅌ doz $5.00, dis 5 %
Socket ... ⅌ doz $5.25, dis 10 %
Planters' ... dis 50 %
Scovill Pattern ... dis 50 %
Handled Planters' ... dis 50 %
Magic ... ⅌ doz $5 net
Grub ... ⅌ doz $11, dis 50 %

Hooks.
Bird Cage, Sargent's list ... dis 60&10 %
Bird Cage, Reading ... dis 40&10 %
Cotton ... ⅌ doz $4.00, dis 50 %
Cotton Patented (N. Y. Mallet & Handle W'ks), dis 30 %
Cotton (Humason & Beckley Mfg. Co) ... dis 40 %
Belt ... dis 60&10
Bench—Hotchkiss' $5.00 ⅌ doz ... dis 10 %
Weston's, No. 1, $10.00; No. 2, $9.00 ⅌ doz ... dis 25 %
McGill's, $3.00 ⅌ doz ... dis 10 %
Clothes Line, Sargent's list ... dis 65&10 %
Clothes line, Reading list ... dis 45&5&10 %
Ceiling, Sargent's list ... dis 60&10&10 %
Harness, Reading list ... dis 40&10&10 %
Coat and Hat, Sargent's list ... dis 60&10&10 %
Coat and Hat, Reading ... dis 40&10&10 %
Wire Coat and Hat, Gem ... dis 4 &10 %
Wire Coat and Hat, Miles' ... dis 70 %
Picture Hooks, Brown's Pat. Solid Brass, $4.00 ⅌ gross ... dis 25 %
Tassel and Picture (T. & S. Mfg. Co.) ... dis 50 %
Wrought Staples and Hooks & Staples .. dis 70&7½&10 %
Wrought Staples, Stanley's list ... dis 70&7½&10 %
Wire Screw Hooks and Eyes ... new list, dis 70&10&— %
Grass and Bush ... dis 45@50 %
Whiffletree—Patent ... dis 40 %
Hooks and Eyes—Malleable Iron ... dis 60&10 %
Hooks and Eyes—Brass ... dis 60&10 %

Horse Nails.

Nos.	5	6	7	8	9	10	
Ausable, ⅌ ℔	31c	28c	26c	25c	24c	23c	dis 30&10 %
Clinton, Plain, ⅌ ℔	23c	21c	20c	19c	18c		dis 30&10 %
Clinton, Fin., ⅌ ℔	24c	22c	21c	20c	19c		dis 30&10 %
Essex, ⅌ ℔	31c	28c	26c	25c	24c	23c	dis 30&10 %
Putnam "	27c	24c	22c	21c	20c	19c	dis 5&7 %
Vulcan, "	26c	23c	21c	20c	19c	18c	dis 12½ %
Globe, "	24c	21c	19c	18c	17c	16c	dis 12½ %
A. C., "	26c	23c	21c	20c	19c	18c	dis 10&10 %
Ch'mpl'in Forged "	31c	28c	26c	25c	24c	23c	dis 30 %
New Haven, "	31c	28c	26c	25c	24c	23c	dis 30&10 %
Bridgewater, "	24c	21c	19c	18c	17c	16c	dis
Saranac, "	26c	23c	21c	20c	19c	18c	dis 30 %

Horse Shoes.—Burden ... ⅌ keg $4.37½
R. I. Horse Shoe Co., Perkins' Improve.
Light, Medium and Heavy ... ⅌ keg $4.37½
Walker's Forged, Light, Med. or Heavy . ⅌ keg $4.37½
Mule Shoes ... ⅌ keg $5.37½
Dunning's Steel ... ⅌ keg $9.25

Ice Awls, Chisels, &c.
American Ice Chisel ... ⅌ doz $4.00 net
National Ice Chisel ... ⅌ doz $6.25 dis 20 %
Novelty Ice Breakers ... ⅌ doz. $6.25 dis 20 %
White's Sliding Head Picks ... ⅌ doz $2.50 dis 40 %
Dunlap's Ring Picks ... ⅌ doz $2.00 dis 20 %
Wood Head Picks, Sargent's ... ⅌ doz $1.60 dis 50&10 %
Iron Head Picks, Sargent's ... ⅌ doz $1.25 dis 50&10 %
Ice Mallets, Pick in head ... ⅌ doz $1.75 dis 15 %
Ice Mallets, Pick in Handle ... ⅌ doz $2.00 dis 15 %
Ice Axes, Small Cast or Malleable .. ⅌ doz $1.20 dis 10 %
Combination Ice Tools ... ⅌ doz $2.00 net

Ice Cream Freezers.
Amn. Mch. Co ... dis 40 %
Torrey's ... dis 40 %
Packer's ... dis 40 %

Ice Creepers.
Safety Reversible ... ⅌ gross $25
Arctic Solid ... ⅌ gross $30 } dis 10 %

Ice Tongs.
Champion ... ⅌ doz $6.00 dis 20&10 %
Family ... ⅌ doz $2.75 dis 15 %

Kettles.
Brass, 7 to 13 inches inclusive ... ⅌ ℔ 28c net
Brass larger than 13 inches ... ⅌ ℔ 32c net

Knives.—Ames' Butcher Knives ... dis 20 %
Ames' Shoe Knives ... dis 15 %
Ames' Bread Knives ... ⅌ doz $1.50 dis 15 %
Moran's Shoe and Bread Knives ... dis 20 %
Hay and Straw, Wadsworth's ... dis 33⅓
Table and Pocket ... See Cutlery

Knobs.
Carriage (Jap'd 80c ⅌ gross) ... dis 60&10 %
Base—Common ... dis 30&10 %
Hemacite Door Knobs ... new list, dis 35&5 %
Door Mineral; Door Por. Jap'd; Door Por. Plated; Door Por. } Same discounts as Door Locks.
Furniture Plain ... 75c gross inch, dis 10 %
Furniture, Wood screws ... dis 20 %
Picture, Judd's ... dis 60&10 %
Picture, Sargent's ... dis 60&10 %
Hemacite, Picture ... dis 35 %
Shutter, Porcelain ... dis 60&10 %

Ladles.
Melting, Sargent's ... dis 50&10 %
Melting, Reading ... dis 30&10 %
Melting, Monroe's Patent ... ⅌ doz $4.00 dis 40 %
Melting, P. S. & W ... dis 30&10 %

Lanterns.
Tubular ... No. 0, $7.50; No. 1, $9.00; With Guards, 40c extra } net
Nail City ... No. 1 ⅌ doz $10; No. 2, $9, net
Meteor ... No. 1, ⅌ doz, $9.50; No. 2 $8.5, net
Hurricane, No. 2 ... ⅌ doz $4.75, net
Peerless, No. 5 ... ⅌ doz $11.75, dis 10&10 %
Brady's Patent ... dis 10&10 %
Ætna ... dis 10&20 %
Yankee ... dis 10&10 %
De Beque ... dis 10&10 %
Police Small, $6.25; Med., $7.50; Large, $10.00, net
Convex Reflector ... $[illegible] ⅌ doz, dis 15 %

Lawn Mowers.
Excelsior and Clipper ... dis 33⅓
Pennsylvania ... dis 30 %
Philadelphia ... dis 20 %

Lemon Squeezers.
Porcelain Lined ... ⅌ doz $6.00, dis 30 %
Wood ... ⅌ doz 3.00, dis 30 %
Eureka, Tinned ... doz 8.00, dis 10 %
Dunlap's Improved ... ⅌ doz 3.75 dis 20 %
Sammis' ... No. 1, $6; 2, $8.40; 12, $15 ⅌ doz; dis 25&10 %
Townsend's Patent ... $6.00 ⅌ doz, dis 33⅓ %
Jennings "Star" ... $4.00 ⅌ doz net
The "Boss" ... ⅌ doz $4.00, dis 10&10 %
Dean's Nos. 1, ⅌ doz, $15.00; 2, $9.00, 3, $5.00 dis 40&10 %

Lines.—Linen Fish ... dis 25&10 %
Cotton Chalk ... dis 55 %
Silver Lake, Braided, Nos. 0, $6.00; No. 1, $6.50; No. 2, $7.00; No. 3, $7.50 ⅌ gross ... dis 20 %
Masons' Linen, No. 3½, $1.50; No. 4, $2; No. 4½, $2.50 ... net
Masons' Colored Cotton ... dis 45 %
Wire Clothes, Galvanized ... each 25c@40c net

Locks and Latches.
Cabinet, Eagle; Cabinet, Gaylord; Cabinet, Bridgeport } Changes made in list price of some numbers Jan. 1, 1881, dis 40 %
Cabinet, P. & F. Corbin ... dis
Cabinet, A. E. Deitz ... dis 30 @ 40 %
Cabinet, Stoddard Lock Co ... dis 40&5 %
Trunk, new list, Jan. 1, 1881 ... dis 15&2 %
Langstroth & Crane's List, Jan. 1, '77.
Round Key, Nos. 1 to 5 ... dis 40&10 %
Round Key, Nos. 5½ to 12 ... dis 40&10 %
Flat Key ... dis 33⅓&10 %
A. E. Deitz, Flat Key ... dis 30@40 %
Yale Lock Co., Flat Key ... dis 40 %
"Shepardson" or "U. S." ... dis 35 %
"Felter" or "American" ... dis 33⅓ %
Plate ... dis 33⅓&2 %
F. Many's "Extension Cylinder" ... $10.50 ⅌ doz net

DOOR LOCKS, ETC.
Branford; Norwalk; Norwich; P. & F. Corbin; Russell & Erwin; Mallory, Wheeler & Co.; Whipple Mfg. Co. } Circular Prices. Revised list of June 11, 1883, dis 50 % and 2 % for cash.
Reading Hardware Co. (low list) ... dis 40&2 %
Padlocks—Russell & Erwin; Mallory, Wheeler & Co; Norwich Lock Mfg. Co.; Wm. Wilcox & Co } dis 30&10 % and 2 % for cash
Yale Lock Mfg. Co.'s "Standard" ... dis 40 %
Romer's ... dis 25 @ 40 %
Conestoga ... dis 60 %
Scandinavian (Moore Bros.) ... dis 80 %
J. H. McWilliams ... dis 10 %
A. E. Dietz ... dis 35 %
"Star" ... dis 45 %
Fraim & Bro. (new list) ... dis 50&10 %

Lustro.—2-oz. bottles, ⅌ doz $1.75 ⅌ gros $17.00 net

Mallets.—Hickory ... dis 10&10 %
Lignumvitæ ... dis 10&10 %
Penfield Block Co., Lignumvitæ & Hickory ... dis 30 %

Meat Cutters.
Dixon's (P.S.&W.) Nos. 1 2 3 4
⅌ doz. $14.00 17.00 19.00 30.00—dis 25&5
Miles' Challenge ... Nos. 1 2 3
⅌ doz.. $22.00 30.00 40.00—dis 40 %
Perry's, Nos. 1 2 3 4 4 g'rd 5 g'rd
Each ... $3.00 4.00 5.00 11.00 14.00 36.00—dis 25&5
Woodruffs (P. S. & W.) ... Nos. 100 150
⅌ doz.. $15.00 18.00—dis 25&5
Hales' ... Nos. 11 12 13
⅌ doz.. $27.00 33.00 45.00—dis 50&10&2 %
Draw Cut .. Nos. 5 2 6 8 10
Each .. $50.00 75.00 80.00 225.00 100.00—dis 2[illegible]
American ... dis 20&10 %
Nos ... 1 2 3 4 B
Each ... $5.00 7.00 10.00 25.00 50.00 60.00
Enterprise ... dis 25 %
Nos ... 10 12 22 32
Each ... $3.00 2.50 4.00 6.10 10.00
Kieser's No. 55 ... $40 ⅌ doz dis 40 %
Kieser's Gem ... $25 ⅌ doz, dis 40 %
Kieser's Monarch ... $45 ⅌ doz, dis 40 %
Kieser's Butcher ... $40 each, dis 20 %
Silver & Deming ... dis 25 %
Pennsylvania ... dis 40&10 %
Nos ... 1 2 3 00
⅌ doz ... $24.00 28.00 36.00 28.00
Beef Shavers (Enterprise Mfg Co.) ... dis 20&10 %

Mincing Knives.
Am. (2d quality), ⅌ gross, 1 blade, $7; 2 blades, $12; 3 blades, $18 ... net
Lothrop's ... dis 20&10 %
Smith's, ⅌ doz, Single, $2.25; Double, $3 ... dis 33⅓&10 %
Cowles Hdw. Co ... dis 55 %

Molasses Gates
Stebbins Patterns ... dis 70&10 %
Stebbins Genuine ... dis 67½&10 %
Stebbins Tinned Ends ... dis 40&10 %
Chase's Hard Metal ... dis 50&10 %
Bush's ... dis 20 %
Lincoln's Pattern ... dis 60&10 %
Wee's ... dis 15 %
Boss Nos. 1 2 3 4
$7.00 8.00 9.00 10.00 .. ⅌ doz. dis 60&10&10 %

Nails ... See Trade Report

Nuts and Washers.—(In lots less than 100 ⅌ ℔ add ½c to list; 1 lb. boxes, add 1c to list.)
Square Nuts ... 8 c off list
Hexagon Nuts ... 8½c off list
Washers ... 7½c off list

Nut Crackers.
Table (Humason & Beckley Mfg. Co.) ... dis 33⅓ %
Blake's Pattern ... ⅌ doz $2.00, dis 5 %
Turner & Seymour Mfg. Co ... dis 50 %

Oakum.—Is on 100 bales and over ½ % ⅌ ℔.
Best ... ⅌ ℔ 9
U. S. Navy ... ⅌ ℔ 8
Navy ... ⅌ ℔ 6¾c

Oilers.—Zinc and Tin ... dis 60 %
Brass and Copper ... dis 50 %
Malleable (Hammer's) ... ⅌ doz. $4.00, dis 10 %
Prior's Patent or "Paragon" Zinc ... dis 60 %
Prior's Patent or "Paragon" Brass ... dis 50 %
Olmstead's, Tin and Zinc ... dis 60 %
Olmstead's, Brass and Copper ... dis 50 %
Broughton's, Zinc ... dis 60 %
Broughton's, Brass ... dis 50 %

Packing, Steam.
N. Y. Belting and Packing Co ... dis 20 %

Pencils.
Faber's Carpenters' ... high list, dis 50 %
Faber's Round Gilt ... ⅌ gross $5.25, net
Dixon's Lead ... ⅌ gross $4.50, net
Dixon's Lumber ... ⅌ gross $6.75, net
Dixon's Carpenters' ... dis 40&10 %

Picks.
Railroad, 5 to 6, $11.00; 6 to 7, $12.00 ... dis 50 %
Adze Eye, 5 to 6, $12.00; 6 to 7, $13.00 ... dis 50 %

Picture Nails.
Brass Head, Sargent's list ... dis 50&10 %
Brass Head, T. & S. Mfg. Co ... dis 50 %
Porcelain Head, Sargent's list ... dis 50&10 %
Porcelain Head, Judd's list ... dis 40@40&10 %
Porcelain Head, T. & S. Mfg. Co ... dis 40 %
Niles' Patent ... dis 40 %

Pinking Irons ... ⅌ doz 75c, net

Plaiting Machines.
Magic ... ⅌ doz $10.00, net
Astor Plaiting Machine ... each $15.00, dis 20 %
Crown Plaiting Machines ... dis 25 %
6 in., $6.50; 10 in., $8.00 each.

Planes and Plane Irons.
Bench, First Quality ... dis 20 %
Bench, Second Quality ... dis 25 %
Molding ... dis 15 %
Bailey's (Stanley R. & L. Co.) new list, Jan. '79. dis 20&10 %
The Stanley (S. R. & L. Co.) new list, Jan. '79 .. dis 20&10 %
Bailey's "Victor" ... dis 20&10 %
Defiance Adjustable ... dis 20&10 %
Laflin Mfg. Co ... dis 35 %
Plane Irons, Butcher's ... $5.00 @ $5.25 to £
Plane Irons, Buck Bros ... $5.00 to £
Plane Irons, Auburn Tool Co ... dis 20 & 10 %
Plane Irons, The Globe Mfg. Co., "Baldwin Iron" ... dis 20 & 10 %
Plane Iron, Ohio Tool Co ... dis 20&10 %
Plane Irons, Sandusky Tool Co ... dis 20 &10 %

Pliers and Nippers.
Button's Patent ... dis 33⅓ %
Hall's Pat. Compound Lever Cutting Nippers, No. 2, 5 in., $13.50; No. 4, 7 in., $21.00 ⅌ doz ... dis 25 %
Humason & Beckley Mfg. Co ... dis 50&10 %
Gas Pliers ... dis 50 %
Eureka Pliers and Nippers ... dis 40 %
Russell's Parallel ... dis 25 %
P. S. & W. Cast Steel ... dis 33⅓&10 %
P. S. & W. Tinners' Cutting Nippers ... add 5 % dis 10 %

Plumbs and Levels.
Disston's ... dis 40 %
Stanley R. & L. Co.'s Pat. Adjustable ... dis 65&10 %
Stanley R. & L. Co.'s Non-Adjustable ... dis 65&10 %
Chapin's Patent Adjustable ... dis 65&10&10 %
Chapin's Non-Adjustable ... dis 65&10&10 %
Standard Rule Co.'s New Adjustable ... dis 65&10 %
Standard Rule Co.'s Non-Adjustable ... dis 65&10 %
Johnson's Patent Adjustable ... dis 65&10 %
Pocket Levels ... dis 65&10 %
Davis' Inclinometers ... dis 20 %

Post Hole and Tree Augers.
Samson Post Hole Digger ... ⅌ doz $27.00, dis 20 %
Fletcher Post Hole Augers ... ⅌ doz $30.00, dis 20 %
Vaughan's Post Hole—6 in., $24.00; 7, 8 and 9 in., $27.00 ⅌ doz ... dis 20&10 %
Eureka Diggers ⅌ doz $27.00 ... net
Leed's each $2.50 ... net

Pruning Hooks and Shears.
Disston's Combined Pruning Hook and Saw, ⅌ doz $19.00, dis 20 %
Disston's Pruning Hook ... ⅌ doz $12.50, dis 20 %
E. S. Lee & Co.'s Pruner ... dis 33⅓ %
Pruning Shears ... ⅌ doz $5.50 @ 6.00
Wheeler, M. & Co.'s Combination ... ⅌ doz $12, dis 20 %
Dunlap's Saw and Chisel ... ⅌ doz $5.00, dis 10 %

Pulleys.
Hot House and Tackle ... dis 65&10 %
Jap'd Screw ... dis 65&10 %
Brass Screw ... dis 70&10 %
Jap'd Side ... dis 60&10 %
Jap'd Clothes Line ... dis 50&10 %
Hay Fork, Solid Eye ... $1.50; Swivel, $5.00, dis 50&10 %
Hay Fork, "Anti Friction" ... $6.75, dis 10&10 %
Hay Fork, "F" Common and Pat. Bushed ... dis 20 %
Hay Fork, Tarbox Pat. Iron ... dis 20 %
Shade Rack ... dis 45 %

Punches.
Belt or Drive ... ⅌ doz $2.00; 2.25 4.50, dis 50 %
Bemis & Call Co.'s Cast Steel Drive ... dis 60&5 %
Bemis & Call Co.'s Springfield Socket ... dis 60&5 %

Spring ..... ₩ do 2 $7.00, dis 50&7½ %
Spring, Leach's Patent ..... dis 15 %
Remis & Call Co.'s Spring and Check ..... dis 30 %
Solid, Tinners' ..... ₩ doz $1.44, dis 40 %

Rail.
Sliding Door, Wrought Brass. ₩ ℔ 43c, dis 12½ %
Sliding Door Bronzed Wrt. Iron.... ₩ foot 12c. dis 35 %
Sliding Door Iron, Painted.... ₩ foot 4c. dis 10&10 %
Barn Door....Inch ... ¼ ⅝ ¾
Per 100 feet $2.00 3.00 5.00—dis 10 %
R. D. for N. E. Hangers—
Small. Med. Large.
Per 100 feet ... $2.10 2.70 .30—net
Terry's Wrought Iron, 500 ₩ foot. net

Razors.
J. R. Torrey Razor Co. ..... dis 4 %

Razor Strops.
Genuine Emerson ..... dis 48 %
Badger's Emerson ..... dis
Badger's (not Emerson) ..... dis 33⅓ %
Imitation Emerson ..... ₩ doz $2.00, dis 20 %
Hunt's ..... dis 40&5 %
Chapman ..... dis 15 @ 2 %
Saunder's ..... dis 10
Torrey's ..... dis

Rivets.
Iron and Tinned, new list, Dec. 10, 1881. ..... dis 40 %
In bulk, new list, Dec. 10, 1881. ..... dis 40 %
Copper Rivets and Burrs ..... dis 40 %
Nos.. 7 8 9 10 11 12 13 14 15
₩ ℔. 40c 50c 52c 54c 56c 58c 60c 65c 70c
Rivet Sets ..... dis 33⅓&10 %

Rods.
Stair, Brass ..... dis 25 %
Stair, Black Walnut ..... 60c. ₩ doz. dis 10 %

Rollers.
Barn Door, Sargent's list ..... dis 5c&10&10 %
Acme (Anti-Friction) ..... dis 50 %

Rope.
Mnfs' List, August 3, 1883. ..... dis 10 ₩ ℔
Manila ..... ½ inch and larger ₩ ℔ 15½c
Manila ..... ¾ inch ₩ ℔ 16 c
Manila ..... ¼ and 5-16 inch ₩ ℔ 16½c
Manila, Tar'd Rope ..... ₩ ℔ 14 c
Manila, Tar'd Lath Yarn ..... ₩ ℔ 18 c
Manila, Hay Rope ..... ₩ ℔ 14½c
Sisal ..... ½ inch and larger ₩ ℔ 10½c
Sisal ..... ¾ inch ₩ ℔ 11 c
Sisal ..... ¼ and 5-16 inch ₩ ℔ 11½c
Sisal, Hay Rope ..... ₩ ℔ 10 c

Rules.

	Boxwood.	Ivory.
Chapin's	dis 70&10 %	dis 45@55 %
Standard		
Stanley		
Stephens	dis 70&10 %	dis 45 %

Sad Irons.
Self Heating ..... ₩ ℔ 3½c net
Self Heating ..... ₩ doz $9.00 net
Self-Heating, Tailors' ..... ₩ doz $18.00 net
Gleason's Shield and Toilet ..... dis 25 %
Mrs. Pott's Irons, Doubled Pointed ..... dis 35 %
Mrs. Pott's Irons, Square Back ..... dis 35 %
Enterprise Star Irons, new list, July 20, 1882. ..... dis 35 %
Combined Fluter and Sad Iron.... ₩ doz $15.00, dis 15 %
Chinese Laundry (N. E. Butt Co.) ..... 8½c, dis 15 %
New England ..... 4c dis 15 %

Sand Paper.
Baeder & Adamson's Flint, 00 to 1½ $4.50 ₩ ream
Baeder & Adamson's Flint, 2, 2½ & 3. 5.00 ₩ ream
Baeder & Adamson's Flint, Assorted. 4.75 ₩ ream
Baeder & Adamson's Star ..... 3.75 ₩ ream
Baeder & Adamson's Emery .. ₩ ream $6.50 @ 11.50
Bartles Flint ..... $4.75&$5.25 ₩ ream dis 35 %
Bartles Harrison, $3.75 ₩ ream ..... dis 35 %
New England same list as B. & A. Flint ..... dis 35 %
dis 30&5 %
Gage's ..... dis 30&5 %

Sash Cord.
Common ..... ₩ ℔ 13c net
Patent ..... ₩ ℔ 15c net
Silver Lake, Hemp ..... ₩ ℔ 9c, dis 10&5 %
Silver Lake, White Cotton ..... ₩ ℔ 8c, dis 10&5 %
Silver Lake, Drab Cotton ..... ₩ ℔ 6c, dis 10&5 %
Raw Hide, ₩ foot, ¼ in., 3c.; 5-16 in., 7c.; ⅜ in., 10c. .. dis 15 %
Steel Ribbon ..... dis 10 %

Sash Locks.
Clark's, No. 1, $10.00; No. 2, $8.00 per gross ..... dis 33⅓ %
Ferguson's ..... dis 33⅓ %
Walker's ..... net
Hammond's Window Springs ..... dis 25 %
Northup Window Springs, No. 1, $10.00 ₩ gross ..... dis 15 %
"Common Sense," Japanned, Coppered and Bronzed. ₩ gross $5.00 net
"Common Sense," Nickel Plated.. ₩ gross $10 00 net
"Universal" ..... dis 40 %

Sash Weights.
Solid Eyes, in 500 ℔ lots and over ..... ₩ ℔ 1¾cnet

Sausage Stuffers or Fillers.
Miles "Challenge" ..... ₩ doz $20, dis 40 %
Perry ..... ₩ doz. No. 15; No. 0, $21, dis 25&10 %
Draw Cut No. 4 ..... each $30.00, dis. 20 %
Enterprise Mfg. Co. ..... dis 25%
Silver's ..... dis 25 %

Saws.
Disston's Circular, Mill and Cross Cut ..... dis 40 %
Disston's Hand, Panel, Rip, &c. ..... dis 20 %
Boynton's Lightning Cross Cuts, new list ..... dis 40 %
Boynton's Circular and Mill ..... dis 40 %
Boynton's Ice ..... dis 25 %
Boynton's Lightning Hand, Panel and Rip ..... dis 25 %
Wheeler & Clemson Mfg. Co.'s Hand ..... dis 30 %
W. M. & C. Mfg. Co. Cross Cuts ..... dis 30 %
Livingston's Butcher and Kitchen ..... dis 20 %
Livingston's Framed Wood—
Nos 101 102 103 104 105
Per doz. ..... $10.00 8.50 10.00 7.50 6.20 net
Peace Circular and Mill ..... dis 40 %
Peace Hand, Panel and Rip ..... dis 25 %
Peace Cross Cuts ..... dis 35 %
Peace Band Saws, all widths ..... dis 10 %
Richardson's Circular ..... dis 40 %
Richardson's Mill and X Cut ..... dis 40 %
Richardson's Hand Panel, Butcher and Web Saws ..... dis 25 %

Saw Frames.
White, Vermont ..... ₩ doz $1.40, dis 25&10%
Red, Polished and Varnished ..... ₩ doz $1.50, dis 10%
Saw Rods ..... $10 list, dis10 & 10%

Saw Sets.
Boynton's Patent X Cut, per doz, $12.00; Hand Saw per doz, $10.00 ..... dis 25 %
Stillman's Genuine ..... ₩ doz $3.50 and $4.50 dis 10 %
Stillman's Imitation ..... ₩ doz $3.25, dis 30&10 %
Common Lever ..... ₩ doz $2.00, dis 30&10 %
Leach's ..... No 0. $8.00; No. 1, $15.00, dis 15 %
Nash's ..... dis 20&10 %
Hammer, Hotchkiss ..... $5.50, dis 10 %
Hammer, Bemis & Call Co.'s new Patent ..... dis 30&5 %
Bemis & Call Co.'s Lever & Spring Hammer ..... dis 30&5 %
Bemis & Call Co.'s Plate ..... dis 10 %
Bemis & Call Co.'s Cross Cut ..... dis 12½ %
Aiken's Genuine ..... $13.00, dis 5a&10 %
Aiken's Imitation ..... $7.00, dis 50 %
Hart's Patent Lever ..... dis 20 %
Disston's ..... dis 20 %
Morrill's ..... No. 1, $15 No. 5, $42, dis 40&5 %

Scales.
Hatch, Counter, No. 171 ..... ₩ doz $42, dis 40 %
Hatch, Tea, No 161. ..... ₩ doz $15.00, dis 40 %
Union Platform ..... $6.00, dis 40 %
Fairbanks' ..... dis 20 %
Richlé Bros ..... dis 20 & 10 %
Buffalo Scale Co. ..... dis 20&5 %
Forsyth Scale Co. ..... dis 25 %
Howe's ..... dis 20&10 %
Chatillon's Grocers' ..... dis 40 %
Chatillon's Eureka ..... dis 25 %
Family Universal, 12 ℔., $30; 24 ℔ $36 ..... net
Family Favorite ..... dis 30 %
Family, Turnbull's ..... dis 30 %
Scale Beams, List of January 12, 1882. ..... dis 4 &10 %

Scrapers.
Adjustable Box Scraper (S. R. & L. Co.), $6.50, dis 20&10%
Box 1 Handle ..... ₩ doz $4.00, dis 10 %
Box Handle ..... ₩ doz $6.00, dis 10 %
Defiance Box and Ship ..... dis 20&10 %
Foot ..... dis 50&10 %
Ship, common ..... ₩ doz $3.50 net
Ship, Providence Tool Co. ..... dis 10 %

Screen Corners.
Porter's Pat Windowand Door Frame ..... dis 33⅓

Screw Drivers.
Douglas Mfg. Co. ..... dis 20&10&10 %
Disston's ..... dis 40 %
Disston's Patent Excelsior ..... dis 40 %
Buck Bros ..... dis 25 %
Stanley Rule & Level Co.'s, Varnished Hdls. ..... dis 60&10 %
Stanley Rule & Level Co.'s, Black Handles ..... dis 50&10 %
Sargent & Co.'s ..... dis 50&10 %
Gay's Double Action Ratchet ₩ doz, 4 in., $9.00; 5 in., $10.20; 6 in., $12.00—dis 35 %
Mallett & Co.'s Double Action Clutch ₩ doz, 4 in., $7.00; 5 in., $8.00; 6 in., $9.00—dis 15 %
Champion ..... dis 25 %
Clark's Patent ..... dis 25 %

Screws.
Flat H'd Iron, new list, Dec 27, 1882. ..... dis 55 %
Round Head Iron, new list, Dec. 27, 1882. ..... dis 55 %
Flat Head Brass, new list Dec. 27, 1882. ..... dis 55 %
Round Head Brass, new list, Dec. 27, 1882. ..... dis 45 %
Brass and Silver Capped ..... dis 40 %
Japanned, list of Plain Screws ..... dis 40&10 %
Coach, Patent Gimlet Point ..... dis 70 %
Bed ..... dis 10&5&20 %
Machine, Flat Head, Iron ..... dis 55 %
Machine, Round Head, Iron ..... dis 50 %
Bench, Iron ..... dis 55&10 %
Bench, Wood, Beech ..... ₩ doz $3.00, dis 10 %
Bench, Wood, Hickory ..... dis 20&10 %
Hand, Wood ..... dis 25&10 %
Hand Rail, Sargent's ..... dis 60&5&10 %
Hand Rail, Humason, Beckley & Co.'s ..... dis 60&5&10 %
Hand Rail, Am. Screw Co., list of Jan. 1, '81. ..... dis 70 %
Jack (Wilson's) ..... dis 25 %

Screw Window Balances.
C. B. Huguuin's, No. 1, $2.10; No. 2, $1.75; No. 3 $1.50 ..... ₩ doz net

Scroll Saws.
Lester, $10.00. ..... dis 25 %
Rogers, $15.00. ..... dis 25 %

Shears and Scissors.
American (Cast) Iron ..... dis 70&5&10 %
Pruning ..... see Pruning Hooks and Shears.
Barnard's Lamp Trimmers ..... ₩ doz $1.75
Tinners' ..... add 6 %, dis 10 %
Seymour's, List, Dec., 1881 ..... dis 60 %
Heinsch's, List, Dec., 1881 ..... dis 60 %
Heinsch's Tailor's Shears ..... dis 15&5 %
Mass. Cutlery Co. St. Trimmers ..... dis 75 %
Cast Steel Trimmers ..... dis 80 %
Wiss, J., & Sons' list, Dec., 1881 ..... dis 60 %
Wiss, J., & Sons' Tailors' Shears ..... dis 40 %

Sheaves.
Sliding Door, M. W. & Co. list ..... dis 5 & 10&2 %
Sliding Door, E. & E. list ..... dis 50&10&2 %
Sliding Door, Patent Roller ..... dis 50&10&2 %
Sliding Door, Patent Roller, Hatfield's ..... dis 50&10&2 %
Sliding Door, Russell's Anti Friction ..... dis 50&10&2 %
Sliding Door, Moore's Anti Friction ..... dis 5 %
Sliding Shutter, E. & E. list ..... dis 50&10&2 %
Sliding Shutter, Sargent's list ..... dis 50&10 %
Sliding Shutter, Reading list ..... dis 50&10 %
Moore's Anti Friction (Hanging) ..... dis 60 %

Shovels and Spades.
Ames, New list July 1, 1881 ..... dis 15 %
Griffiths ..... dis 50&5 %
Old Colony ..... dis 15 %
Payne Pettebone & Son, new list ..... dis 40&10 %
Payne Pettebone & Son, R. R. Shovels ..... dis 15 %
Remington's (Lowman's Patent) ..... dis 30 %
Rowland's ..... dis 50&5 %

Shovels and Tongs.
Iron and Brass Head, R. & E. list ..... dis 60&10&2 %
Iron and Brass Head, P. S. & W. ..... dis 50&5&10 %
Polished Steel, new list ..... dis 40&10&2 %

Slates.
Square Frames, by case ..... dis 70 %
Less than a case ..... dis 65&10 %

Spoke Shaves.
Defiance Metallic ..... dis 20&10 %
Iron ..... dis 45 %
Wood ..... dis 30 %
Bailey's (Stanley R. & L. Co.), new list ..... dis 30&10 %
Stearns' ..... dis 30&10 %

Spoke Trimmers.
Bonney's ..... ₩ doz $10.00, dis 40&5 %
Stearns' ..... ₩ doz $9.00, dis 20&10 %
Ives' ..... No. 1, $15.00; No. 2, $12.00 ₩ doz, dis 55&10 %
Douglass' ..... ₩ doz $9.00, dis 15 %

Spoons.
Basting ..... dis 60&10 %
Solid Table and Tea ..... dis 60 %
Britannia ..... dis 60&10 %
Reed & Barton ..... dis 40&10&5 %
Holmes, Booth & Haydens ..... dis 40&10&5 %
German Silver ..... dis 30&10&5 %
Cast Steel, Silver Plated ..... dis 33⅓ %
Tin (P. S. & W.), Teas ..... $1.25 ₩ gross, net
Tin (P. S. & W.), Tables ..... $2.00 ₩ gross, net
Tin (Cowles Hdw. Co.) ..... dis 10 %
Tin (Cowles Hdw Co.), case lots ..... dis 20 %

Stocks and Dies.
"Lightning" Screw Plate ..... dis 5&10 %

Stone.
Hindostan No. 1, 60; Axe, 80 ..... dis 40 %
Sand Stone ..... ₩ ℔ 50, dis 33⅓&10 %
Washita Stone ..... No. 1, ₩ ℔ 18c net
Washita Stone ..... No. 2, ₩ ℔ 16c net
Washita Stone, Slips ..... No. 1, ₩ ℔ 37c net
Arkansas Stone No. 1. 4 to 6 in. ..... ₩ ℔ $1.35 dis 10 %
Arkansas Stone No. 1. 6 to 9 in. ..... ₩ ℔ $2.00 dis 10 %
Turkey Oil Stone (Chase).... 4 to 8 in., ₩ ℔, 60c, dis 10 %
Turkey Slips (Chase) ..... $1.75 ₩ ℔ dis 10 %
Lake Superior (Chase) ..... ₩ ℔ 16c, dis 10 %
Lake Superior, Slips (Chase) ..... ₩ ℔ 30c, dis 10 %
Grindstones, Family, Lorine's ..... dis 10 %

Stove Polish.
Joseph Dixon's ..... ₩ gross $6.00, dis 10 %
Gem ..... ₩ gross $4.50, dis 10 %
Gold Medal ..... ₩ gross $6.00, dis 25 %
"Mirror" ..... ₩ gross $6.00, dis 5 %
Lustro ..... ₩ gross $4.75, net
Ruby ..... ₩ gross $3.75, net
Rising Sun ..... ₩ gross $5.75, net
Dixon's Plumbago ..... ₩ ℔ 8c. net
Joynton's Noon Day ₩ gross No. 1, large, $5.40 No 2, small, $3 ; No. 3, medium, $4.

Squares.
Steel and Iron ..... dis 50&10&2 %
Nickel Plated ..... dis 50&10&2 %
Try Square and T Bevels ..... dis 50&10 %
Disston's Try Square and T Bevels ..... dis 40 %
Winterbottom's Try and Mitre ..... dis 20&10 %

Tacks, Brads, &c.
New List, Sept. 1, 1882.
Tinned Swedes Tacks ..... dis 30 %
Tinned American Tacks ..... dis 30 %
Swedes Tacks, all kinds ..... dis 30 %
American Cut Tacks ..... dis 30 %
Copper Tacks and Nails ..... dis 30 %
Swedes Hungarian Nails ..... dis 34 %
Gimp and Lace Tacks ..... dis 30 %
Gimp and Lace Tacks, Tinned ..... dis 30 %
Finishing Nails ..... dis 25 %
Trunk and Clout Nails ..... dis 25 %
Common and Patent Brads ..... dis 20 %
Basket Nails ..... dis 20 %
Brush Tacks ..... dis 20 %
Leathered Carpet Tacks ..... dis 20 %
Cigar Box Nails ..... dis 20 %
Chair Nails ..... dis 20 %
Double-pointed Tacks ..... dis 40& 5%
EXTRA 10 % OFF ALL

Tap Borers.
Common and Ring ..... dis 20 %
Ives' Tap Borers ..... dis 15&10 %
Enterprise Mfg. Co ..... dis 20&10 %

Tapes, Measuring.
American ..... dis 25 %
Spring ..... dis 25&10 %
Chesterman's ..... regular list dis 20@25 %

Thermometers.
Tin Case ..... dis 75&10 %

Tobacco Cutters.
Enterprise Mfg. Co. (Champion) ..... dis 20&10 %
Wood Bottom ..... ₩ doz $10.00, dis 25&10 %
All Iron ..... ₩ doz $8.25, dis 15 %
Nashua Lock Co.'s ..... ₩ doz $18.00 dis 50&5% %
Wilson's ..... dis 35 %
Clipper (Sargent & Co.) ..... ₩ doz $18.00, dis 20 & 10 %

Toe Calks.
Winsted ..... ₩ ℔ 9c, dis 5

Tinners' Tools and Machines.
Machines (P. S. & W.) ..... list add 20 %
Tools (P. S. & W.) ..... add 6 %
dis 10 %

Transom Lifters.
Wollensak's Patent ..... dis 35 %
Reiher's Patent, new list, Feb., 1882 ..... dis 20&10&10 %
Excelsior ..... dis 50&10&2 %

Traps.
Game, Newhouse ..... dis 35 %
Game, Oneida Pattern ..... dis 60 %
Game, Blake's Patent ..... dis 40&5 %
Mouse, Wood, Choker ..... ₩ doz holes, 15c
Mouse, Round Wire ..... ₩ doz $1.50, dis 10 %
Mouse Cage, Wire ..... ₩ doz $2.50, dis 10 %
Mouse, Catch-em-alive ..... ₩ doz $3.50, dis 15 %
Mouse, "Bonanza" ..... per gross $10.00 net
Rat, "Decoy" ..... ₩ doz $10.00, dis 10 %

Trowels.
Lothrops' Brick and Plastering ..... dis 25 %
Reed's Brick and Plastering ..... dis 15 %
Disston's Brick and Plastering ..... dis 30 %
Peace's Plastering ..... dis 25 %
Clement & Maynard's ..... dis 20 %
Rose's Brick ..... dis 15 %
Brades' Brick ..... dis 25 %
Worrall's Brick and Plastering ..... dis 20 %
Garden ..... dis 55 %

Triers.
Butter and Cheese ..... dis 25 %

Trucks (Warehouse, &c.
Penfield Block Co.'s list, 1882. ..... dis 40 %

Vises.
Solid Box ..... dis 35 %
Solid "Crown" (A. H. Hildick) ..... 40 to 100 ℔, 15c net
Solid, Peter Wright's 15¾c
Solid, Wilkinson's ..... 14@15c
Parallel, Parker's ..... dis 10 %
Parallel, Wilson's ..... dis 35&10 %
Parallel, Howard's ..... dis 20&10 %
Parallel, Merrill's ..... dis 15 %
Parallel, Sargent's ..... dis 60&10 %
Parallel, Backus and Union ..... dis 40 %
Parallel, Oval Slide ..... dis 40 %
Parallel, Double Screw Leg ..... dis 15&10 %
Parallel, Prentiss ..... dis 25 %
Parallel, Simpson's Adjustable ..... dis 25&5 %
"Family," List ..... net
Saw Filers, Bonney's ..... ₩ doz $24.00, dis 20&10 %
Saw Filers, Stearn's ..... dis 20&10 %
Saw Filers, Hopkins' ..... ₩ doz $17.50, dis 10 %
Saw Filers, Reading ..... dis 40&10 %
Cowell Hand Vises ..... dis 20 %
Richardson's Vise and Anvil ..... dis 25 %

Washer Cutters.
Smith's Patent ..... ₩ doz $12.00, dis 25 %
Johnson's ..... ₩ doz $11.00, dis 33⅓ %
Penny's ..... ₩ doz Pol. $17.50; Jap'd, $16.50, dis %
Appleton's ..... ₩ doz $16.00, dis 50&10 %

Washers.—See Nuts and Washers.

Well Wheels ..... dis 60&10 %

Wire.

	Per doz.	
Brass and Copper	dis 33⅓ %	
Market, Bright an i Annealed	dis 55 @ 57½ %	
Market, Coppered	dis 50 @ 52½ %	
Market, Galvanized	dis 45 @ 47½ %	
Market, Tinned, Tinned list	dis 47½ @ 50 %	
Stone, Bright and Annealed Nos. 0 to 18	dis 57½ @ 60 %	
Stone, Bright and Annealed Nos. 19 to 26	dis 60 @ 65 %	
Stone, Bright and Annealed Nos. 27 to 36	dis 62½ @ 70 %	
Stone, Galvanized Nos. 19 to 30	dis 45 @ 50 %	
Stone, Tinned, Tinned list	dis 45 @ 47½ %	
Tinned Broom Wire	dis 57½ @ 60 %	
Cast Steel Wire	dis 47½ @ 50 %	
Annealed Fence, Nos. 8 & 9	dis 57½ @ 60 %	
Annealed Grape, Nos. 10 to 14	dis 57½ @ 60 %	
Fence Staples	₩ ℔ 5¾ @ 5¾c	
Fence Staples, Galvanized	₩ ℔ 6¼ @ 6¼c	
Stubs Steel Wire	$6.00 to £ dis 30 %	
Japanned Barb Fence	₩ ℔ 6¼c	
Galvanized Barb Fence	₩ ℔ 7¼c	
Steel Music Wire, Nos. 7 to 30	$1.00 ₩ ℔	
Picture Wire, T. S. & J.	dis 40 %	
Clothes Line Wire, Galvanized	₩ coil 25 @ 28c net	
Wire Cloth, green, drab and black,	₩ sq. ft., 2c. @ 2½c.	net

Lots of 1 doz., dis 40 %; lots of 5 doz., dis 45 % per doz.

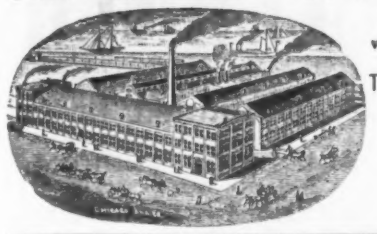
Wrenches.
American Adjustable ..... dis 40 %
Baxter's Adjustable "S," list Jan., 1880. ..... dis 20&5 %
Baxter's Diagonal ..... dis 20&5 %
Coes' Genuine ..... dis 50&5 %
Coes "Mechanics" ..... dis 50&10&3 %
Coes' Pattern, Malleable ..... dis 75 %
Coes' Pattern Wrought ..... dis 65@70 %
Girard Standard ..... dis 60 %
Girard Agl ..... dis 70 %
Bemis & Call's Patent Combination ..... dis 20 %
Bemis & Call's Merrick 's Pattern ..... dis 35 %
Bemis & Call's Brigg's Pattern ..... dis 25 %
Bemis & Call's Cylinder or Gas Pipe ..... dis 40 %
Van Wagoner & Williams' Basin ..... ₩ doz $4.50
Aiken Pocket (Bright) ..... $6.00, dis 50&10 %
The Favorite Pocket (Bright) ..... ₩ doz $4, dis 40 %
Webster's Patent Comoination ..... dis 25 %
Taylor's Farmers' ..... dis 25 %

Wringers.

	Per doz.	
Universal, XX, No. 2½	$2.00	
Universal, XX, No. 2	45.00	
Universal, XX, No. 1½	41.00	
Universal, XX, No. 1	36.00	
Peerless, no Cogs, No. 1	42.00	
Peerless, with Cogs, No. 2½	45.00	
Peerless, with Cogs, No. 2	36.00	
Peerless, with Cogs, No. 3	54.00	
Peerless, with Cogs, No. 4	66.00	
Eureka, No. 2	42.00	
Novelty No. 2, for Common Tubs	$42.00	
Novelty No. 3, for Common Tubs	48.00	
Excelsior No. E, for Stationary Tubs	$41.00	
Excelsior No. F, for Stationary Tubs	47.00	
Excelsior No. A, with Folding Bench	60.00	
Excelsior No. B with Folding Bench	66.00	

Lots of 1 doz., dis 40 %; lots of 5 doz., dis 45 % per doz.

THE IMPROVED CUMMER AUTOMATIC ENGINE.



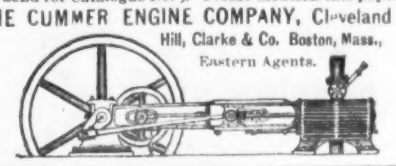
WE BUILD FIVE CLASSES OF ENGINES.

No Steam-Engine Establishment in the U. S. is as well equipped as ours for doing first-class work.

Send for Catalogue No. 9. Please mention this paper.

THE CUMMER ENGINE COMPANY, Cleveland O.

Hill, Clarke & Co. Boston, Mass., Eastern Agents.



CAUTION.

THE

"Peter Wright" Patent Anvil.

It having come to our knowledge that Anvils of inferior make, and marked in a manner calculated to mislead buyers, are being sold as the "PETER WRIGHT" ANVIL, we beg to inform all buyers that all our Anvils are stamped on the side

PETER
WRIGHT
PATENT

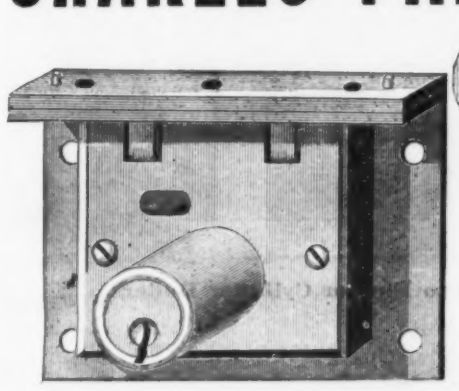
SOLID WROUGHT

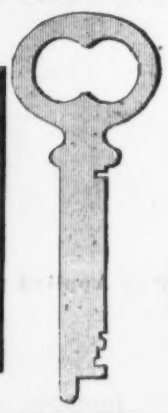
and none are genuine unless they bear these marks. We also gum a green label on the other side of Anvil.

PETER WRIGHT & SONS.

THE

CHARLES PARKER CO.,





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CABINET LOCKS.

THOMPSON McCOSH, President. JOHN A. McCOSH, Sec. and Treas.

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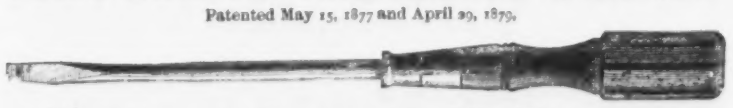
TOWER'S CHAMPION SCREW DRIVER.

SOLID BOLSTER AND FLUTED HANDLES

Patented May 15, 1877 and April 29, 1879.



Hand Forged. Tempered in Oil. Warranted.

EVERY BLADE TESTED AT THE FACTORY.

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The above cut represents Preston's Patent Braided Cable Wire Fence Rail manufactured by the **HOLLOW CABLE MFG CO., Hornellsville, N. Y.** We also manufacture extensively four different sizes Wire Clothes Lines. Send for Circulars and Price Lists.

Chamberlain, Coxe & Millar, Western Agents, 89 Lake St., Chicago, Ill.

Elevator scales—all varieties, Erie Elevator, Dow's, Storr's and others. Send for estimates.

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SCALES AND TESTING MACHINES

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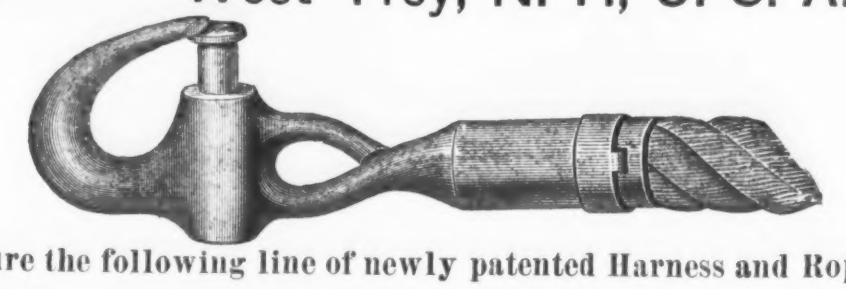
THE HARTFORD HAMMER CO., Hartford, Conn.

Manufacturers of Solid Cast Steel Hammers, fully WARRANTED.

All Hammers stamped "HARTFORD" are See first issue of each month.

THE UNION HARDWARE MFG. CO.,

West Troy, N. Y., U. S. A.,



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Loop, Round Eye, Open Eye, Double and Swivel "Union Snaps;" Improved German Snaps; Cattle and Horse Ties, in Hemp and Jute, with Rope Clamp, obviating Double Splice (see cut); Rope Buckle and Rope End Clamp; Leather Horse Ties; Hitching, Breast, Rein and Halter Chains, &c., &c.

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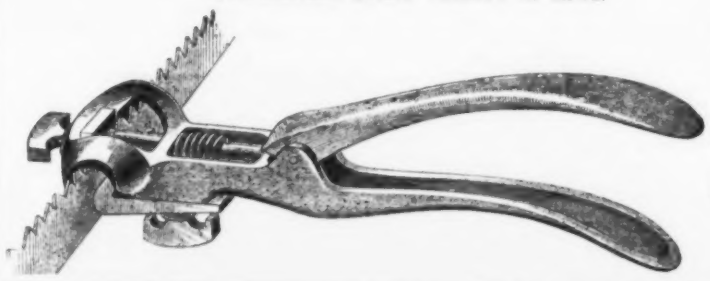
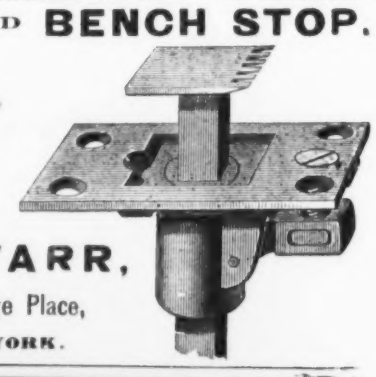


For price lists and discounts Address

ASA FARR,
64 College Place,
NEW YORK.



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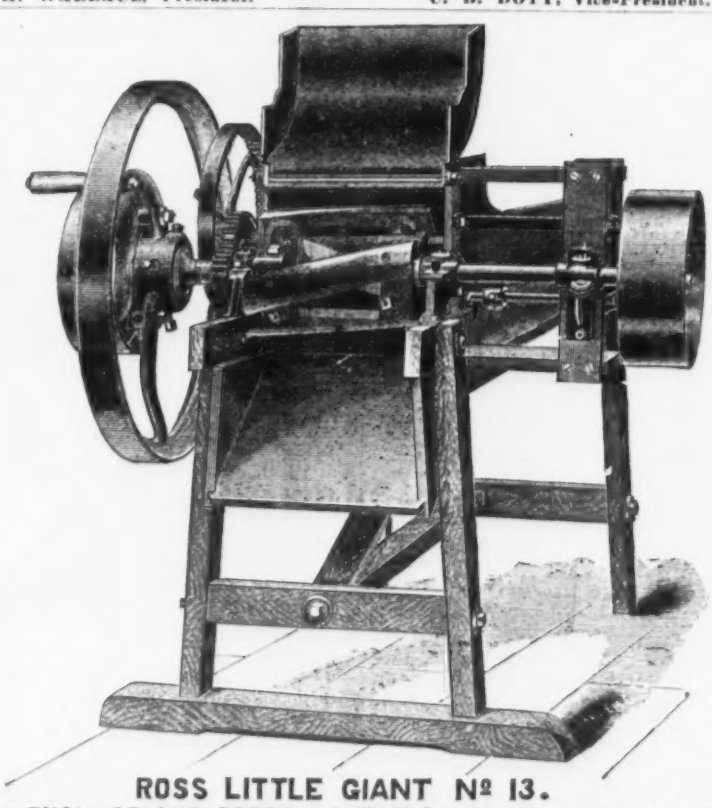
Forge and Foundry, JEFFERSON IRON WORKS.

Office and Works, - - - - - - - - - STEUBENVILLE, OHIO.

W. H. WALLACE, President. C. B. DOTY, Vice-President. GEO. P. HARDEN, Secretary.



ROSS LITTLE GIANT No 13.

ROSS ENSILAGE AND FODDER CUTTERS, Giants and Little Giants.

THE VERY BEST CUTTERS IN THE MARKET.

GUARANTEED TO GIVE PERFECT SATISFACTION.

Our 1883 Cutters are the finest we have ever produced. A liberal discount to the trade. Write for prices and illustrated circular.

E. W. ROSS & CO., Fulton, Oswego Co., N. Y.

Mention *The Iron Age.*

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MANUFACTURERS OF LIGHT AND MEDIUM WEIGHT

GRAY IRON CASTINGS,

METAL PATTERN MAKERS AND JAPANNERS.

Correspondence solicited.

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MANUFACTURERS OF THE

U. S. A. M. and J. H. brands of Cold Rolled and Polished SHEET IRON AND SHEET STEEL.

RIVETS, BOILER, TANK AND BRIDGE.

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VULCAN BOILER WORKS.

JAMES McNEIL & BRO.,

MANUFACTURERS OF

BOILERS, SHEET IRON, ROLLING MILL AND BLAST FURNACE WORK

Of all Kinds.

Vertical Boilers and Engines a Specialty. Repairing Done Promptly.

29th Street and A. V. R. R.,

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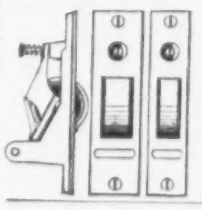
Specifications for Boilers furnished free of charge



HUGUNIN SASH BALANCES,

BRONZE FINISHED.

3 sizes, made with late improvements. Genuine Hugunin Balances have my name cast upon them as "Patentee and Solely Authorized Maker," and dates of patents on the boxes containing same. Beware of imitations, and save trouble from infringement.

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Dynamite, Nitro Glycerine,

BLASTING MATERIALS.

Contracts Taken for Clearing Lands of Stumps.

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THE HERCULES POWDER COMPANY

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GEO. M. EDDY & CO.,

Manufacturers of

Measuring Tapes

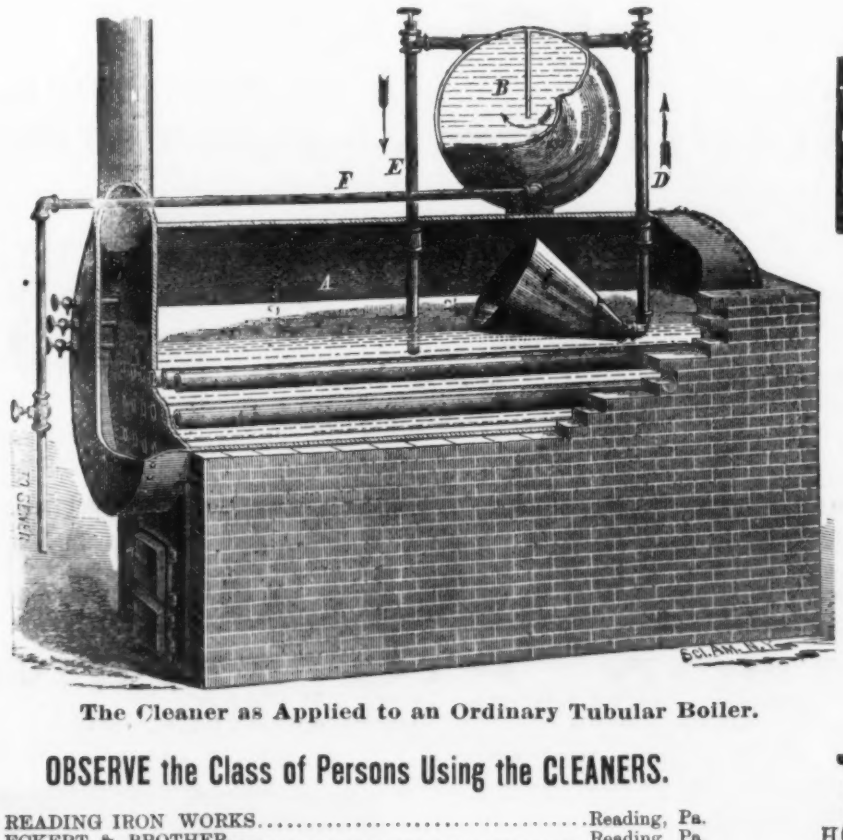
Of Cotton, Linen & Steel,

FOR ALL PURPOSES.

351 to 353 Classon Ave., Brooklyn N. Y.

THE HOTCHKISS MECHANICAL BOILER CLEANER.

A simple, effective and inexpensive device for the removal of **all** foreign substances contained in the Feed-water of Steam Boilers, whether the same consists of lime or vegetable matter, which, not being removed, adheres to the heating surfaces of the Boiler and forms a hard scale. This can be obviated in only one way, and that is by continuously skimming the surface of **all** scum as fast as it rises to the surface (ebullition drives it **all** to the surface before settlement takes place). THE HOTCHKISS CLEANER does this perfectly by a **constant circulation** of the surface water into the Funnel, which rises up pipe D into reservoir B, where the **most inviting** place is offered for the sediment to settle, while the purified water continuously returns to the Boiler by pipe E to a lower and cooler stratum of water. This action being constant, the results are to be daily or hourly seen by opening the Mud Blow-off F; and on opening the Boiler at usual time, to find it free from mud or sediment. If you are **skeptical and responsible, order one on trial** of usual time and be convinced, like many others have been. To parties using a large number of Boilers, the CLEANER will save them largely in repairs and delays occasioned thereby, as well as the danger of explosion caused by impure water. **Foaming is entirely obviated.**

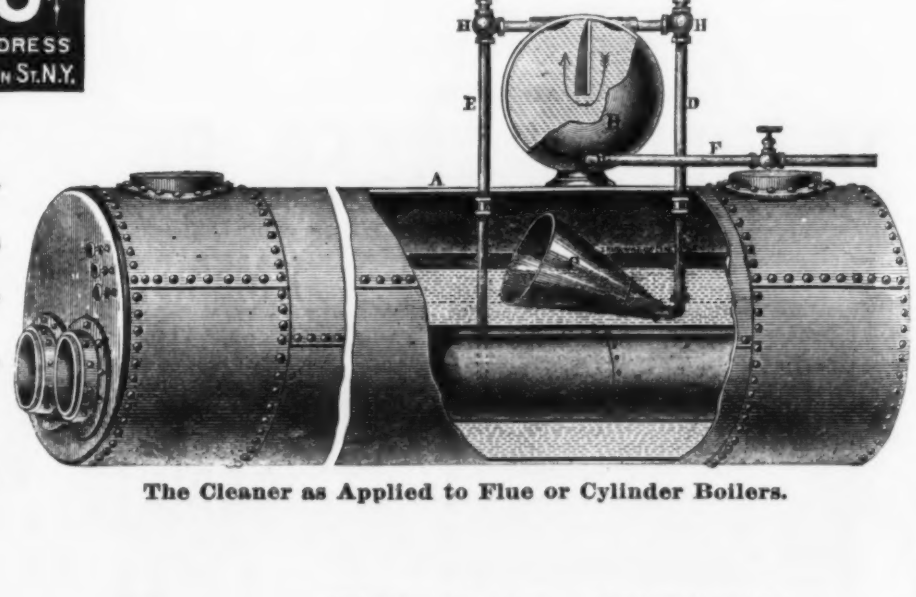


The Cleaner as Applied to an Ordinary Tubular Boiler.

HOW TO KEEP **BOILERS** CLEAN
FREE Book Sent To Any Address
By Jas. F. Hotchkiss, 84 John St. N.Y.

Giving general information to Steam Users and Engineers. **Over 45,000 sent out during the year 1882.**

PATENTED 1875.
RE-ISSUE 1877.
IMPROVEMENTS 1883.



The Cleaner as Applied to Flue or Cylinder Boilers.

OBSERVE the Class of Persons Using the CLEANERS.

READING IRON WORKS	Reading, Pa.
ECKERT & BROTHER	Reading, Pa.
WM. McILVAIN & SONS	Reading, Pa.
CARNEGIE BROTHERS & CO.	Bessemer, Pa.
ALBANY & RENSSELAER IRON & STEEL CO.	Troy, N. Y.
NORTH CHICAGO ROLLING MILL CO.	Chicago, Ill.
UNION ROLLING MILL CO.	Chicago, Ill.
NATIONAL TUBE WORKS CO.	Chicago, Ill.
SPUYTEN DUYVIL ROLLING MILL CO.	Spuyten Duyvil, N. Y.
BENJ. ATHA & CO. STEEL WORKS	Newark, N. J.
UNION ROLLING MILL CO.	Cleveland, Ohio.
LAMSON, SESSIONS & CO.	Cleveland, Ohio.
STANDARD OIL CO.	Cleveland, Ohio.
POTTSTOWN IRON CO.	Pottstown, Pa.
WRIGHTSVILLE IRON CO.	Pottstown, Pa.
WARWICK IRON CO.	Pottstown, Pa.
WESTINGHOUSE AIR BRAKE CO.	Pittsburgh, Pa.
WARWICK IRON CO.	Boyerstown, Pa.
OMAHA SMELTING WORKS	Omaha, Neb.
MIDVALE STEEL CO.	Midvale, Pa.
POUGHKEEPSIE IRON WORKS	Poughkeepsie, N. Y.
C. H. & F. H. STOTT	Hudson, N. Y.
SYRACUSE IRON WORKS	Syracuse, N. Y.
WESTERN UNION TELEGRAPH CO.	New York.
COLORADO IRON WORKS	Denver, Col.
CHOUTEAU, HARRISON & VALLE	St. Louis, Mo.
MICHIGAN BOLT & NUT WORKS	Detroit, Mich.
BIGELOW BOILER CO.	New Haven, Conn.
PHILADELPHIA IRON AND STEEL CO	Philadelphia, Pa.
STANDARD OIL CO.	New York, N. Y.
H. DISSTON & SONS	Philadelphia, Pa.
ACME OIL CO.	Titusville, Pa.
HOOPES BROS. & TOWNSEND	West Chester, Pa.
STATE JOURNAL CO.	Lincoln, Neb.
HAYNES & SON	Salt Lake City, Utah.
P. BALLANTINE & SON	Newark, N. J.
LISTER BROTHERS	Newark, N. J.
CATERET CHEMICAL CO.	Newark, N. J.
STAFFORD'S OAKUM FACTORY	Jersey City, N. J.
ALLAIRE, WOODWARD & CO.	Peoria, Ill.
CHARLESTON ELECTRIC LIGHT CO.	Charleston, S. C.
CLAUSSEN BREWING CO.	Charleston, S. C.
NEIL, TIPPETT & KILLIAN	Lancaster, Ohio.
AKRON MFG. CO.	Akron, Ohio.
EVANSVILLE FURNITURE CO.	Evansville, Wis.
P. WHITE'S SONS	New York, N. Y.
GERMAN SMITH	Winchester, Va.
PORTER MFG. CO.	Syracuse, N. Y.

UNION ROLLING MILL COMPANY,
NEWBURGH, OHIO, April 24, 1882.

JAS. F. HOTCHKISS, ESQ., New York:

Dear Sir—Your favor of 22d inst. received, covering invoice of three Cleaners. Inclosed we remit you for same. We are much pleased with the Cleaners, and think without them would soon have tubes thoroughly covered. You can refer to me if desired. Yours truly,

J. MORGAN COLEMAN, Supt.

This Cut represents the Hotchkiss Cleaner in all its parts, ready to be screwed together, A A being the top of Boiler Shell.

NOTICE.

The Hotchkiss Boiler Cleaner is a worthy invention, and ALL worthy inventions have **worthless imitators. Patented in 1875,** it has been introduced and brought to its present state of perfection by persistent efforts and the expenditure of a large amount of money. It is the first or foundation patent. Should any one offer to sell you a Boiler Cleaner, ask him the date of his patent (if any); also, if it has a pipe leading from the surface water to a reservoir. Has it a reservoir? Has it a return pipe? Has it a blow-off pipe? If so, your answer can only be—The Hotchkiss Cleaner has these parts only. Besides, it is the original patent, and, being **simpler** and **cheaper** than any **imitation** or **infringement,** no fair business man can encourage or sanction any other and do justice to all concerned.

OBSERVE this List and TESTIMONIALS.

MINING.

ALICE GOLD & SILVER MINING CO.	Butte City, Montana.
SILVER BOW MILL & MINING CO.	Butte City, Montana.
DEXTER MILL.	Butte City, Montana.
LEXINGTON MILL & MINING CO.	Butte City, Montana.
ANACONDA MINING CO.	Butte City, Montana.
FATHER DE SMET GOLD MINING CO.	Golden Gate, Black Hills.
WALKER BROTHERS.	Salt Lake City, Utah.

THE ALICE GOLD AND SILVER MINING CO.,
WALKERVILLE, MON., Dec. 26, 1882.

To Whom It May Concern:

This is to certify that the Alice G. & S. Mining Co. have had in use during the past six months five Hotchkiss Boiler Cleaners, furnished by Messrs **Belmore & Mahoney,** of Butte City, and we consider them of the greatest importance where water is used containing silicious and other sedimentary matter injurious to boilers.

Since using the Hotchkiss Cleaners we find little or no scale on our tubes and boiler sheets, whereas before using them scale accumulated on both from one eighth to one-fourth of an inch in thickness, necessitating frequent stoppages to clean our boilers.

We cheerfully recommend them to all parties who are obliged to use water from the mines in their boilers.

WILLIAM E. HALL, Supt.

Office of MICHIGAN BOLT AND NUT WORKS,
DETROIT, MICH., May 8, 1882.

MR. JAMES F. HOTCHKISS, 84 John Street, New York:

Dear Sir—Please send us at once another Boiler Cleaner for our second boiler. The first one has given perfect satisfaction, and does all you claim for it. Could not well be without it. Yours truly,

MICHIGAN BOLT AND NUT WORKS.

Office of SPUYTEN DUYVIL ROLLING MILLS,
NEW YORK, August 10, 1881.

MR. JAS. F. HOTCHKISS:

We have used the Hotchkiss Mechanical Boiler Cleaners for some time at our Rolling Mill at Spuyten Duyvil, and they have given excellent satisfaction.

WM. LEWIS, Supt.

Office of EPPINGER & RUSSELL,
160 Water St., NEW YORK, August 2, 1881.

MR. J. F. HOTCHKISS:

Dear Sir—We have had in use for a number of months your Boiler Cleaner, and find, after opening the boiler, no new formation, but find the old scale continually dropping off. It has also cured the boiler of *foaming*, with which we were greatly troubled. We are using hard well water. Yours,

GEO. S. VALENTINE, Manager.

Represented in Pennsylvania and South America by

HENRY C. MORRIS,
209 South Third Street,
PHILADELPHIA.

JAMES F. HOTCHKISS,

86 JOHN STREET, NEW YORK,

SOLE PROPRIETOR.

The Iron Age Directory

And Index to Advertisements.

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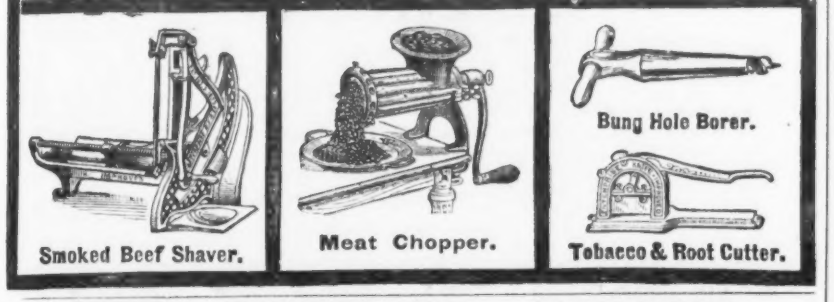
MRS. POTTS'
Cold Handle Double Pointed Sad Irons.

Tincture Presses,
Self-Weighing
Cheese Knife,
Cork Presses.

THE BEST
ARE THE
CHEAPEST.

SOLD BY HARDWARE DEALERS.
SEND FOR ILLUSTRATED CATALOGUE, FREE.



THE STANLEY WORKS,

MANUFACTURERS OF

Wrought Iron Butts, Hinges

AND

DOOR BOLTS,

Plain, Japanned, Bronzed and Plated.

FACTORIES: New Britain, Connecticut.

WAREHOUSE: 79 Chambers St., New York.

Bemis & Call Hardware & Tool Co.

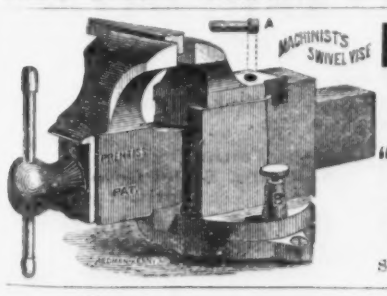
This Wrench can be furnished with Briggs' Pat. Nut or Sleeve

PATENT COMBINATION WRENCH.

These Wrenches are made from the best of Wrought Iron, with Steel Head and Jaw, case-hardened throughout, and not only combine all of the superior qualities of our Cylinder or Gas Pipe Wrenches, but also all requisite Combinations of a reguiar Nut Wrench, thus making a combination which has no equal.

For Circulars and Price List, address

BEMIS & CALL HARDWARE & TOOL COMPANY, Springfield, Mass.



PRENTISS' PAT. VISES,

Adjustable Jaw.

Stationary or Pat. Swivel Bottoms.

ADAPTED TO ALL KINDS OF VISE WORK. ALSO

"PEERLESS" SWIVEL PIPE GRIP

FITS ANY VISE. SOLD BY THE TRADE.

PRENTISS VISE CO.,

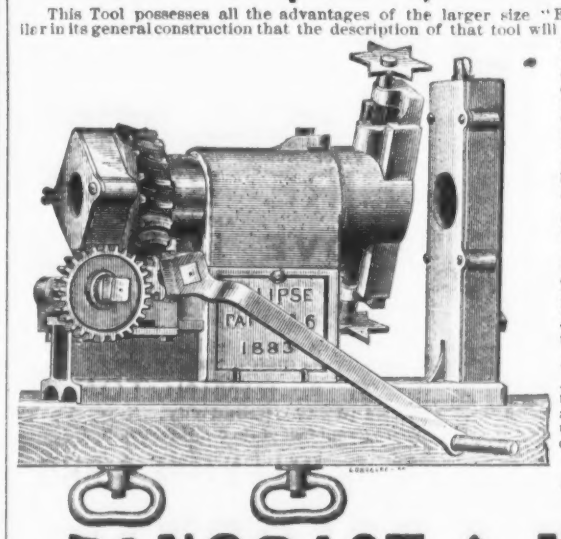
23 Dey Street, New York.

SOLE PROPRIETORS. SEND FOR CIRCULAR.

THE

"Junior" Eclipse Pipe-Cutting Machine

This Tool possesses all the advantages of the larger size "Eclipse" Machine, and is so similar in its general construction that the description of that tool will serve for the "Junior" also. It meets the requirements of those who have use for a Screwing Machine light enough to be readily carried about, sufficiently powerful in its gearing (18 to 1) to work easily, and strong enough to bear rough usage. All of these points, with the very important one of MODERATE COST, are to be found in the **"Junior" Eclipse Machine.**



It will cut off and thread Pipes from ⅛ to 2-inch, inclusive; can be erected on any fence, box or plank in five minutes by simply boring two ⅜ holes, and weighs, complete, about 125 pounds. It has no complicated parts and nothing to break or get out of order, and will do the work of a tool costing twice its price.

We offer it, as also the large size "Eclipse" cutting pipe 2½ to 4 inch, with the understanding that if not found satisfactory after a fair trial it may be returned to us within thirty days and the purchase money will be refunded.

PRICE, Complete with Dies 1-4 to 2 inches, $60.

PANCOAST & MAULE,

243 & 245 So. Third St., PHILADELPHIA.

MELLERT FOUNDRY & MACHINE CO., LIMITED.

(Works Established at Reading Pa., in 1848.)

MANUFACTURERS OF

CAST IRON GAS & WATER PIPE

Also Flange Pipe, for Steam or Water, of all sizes used. Special Castings, such as Branches, Bends, Reducers, Sleeves, &c. Stop Valves, Fire Hydrants, Retorts, Lamp Posts, &c.

The Improved Canada Turbine Water Wheel.

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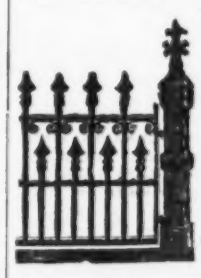

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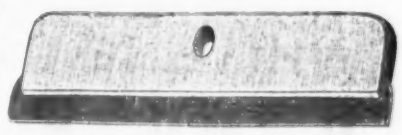

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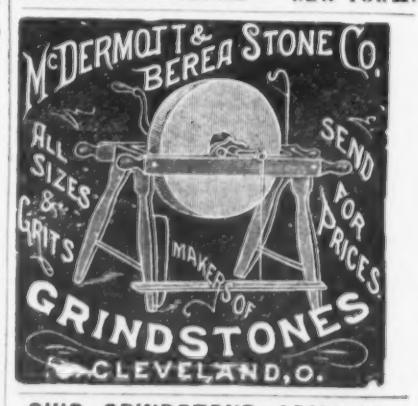

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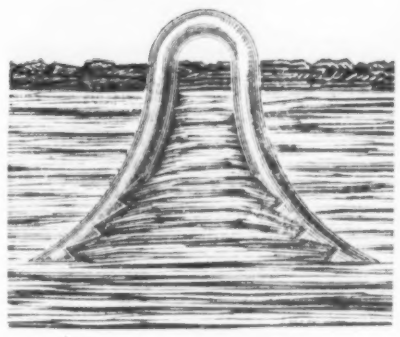

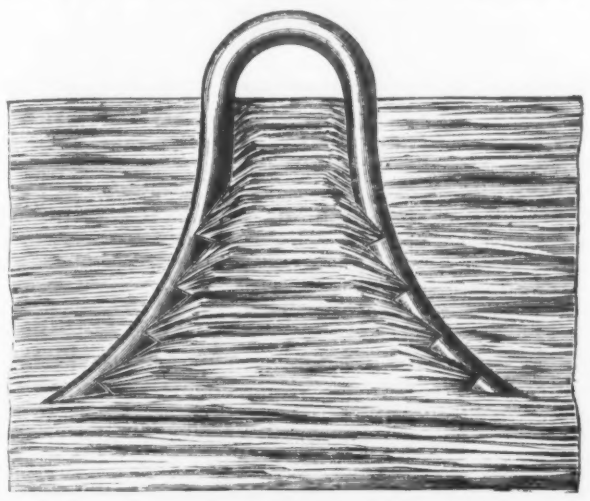

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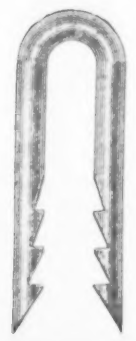

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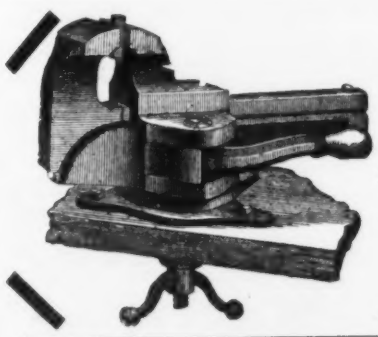

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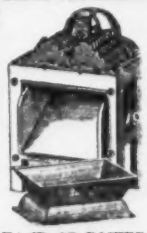

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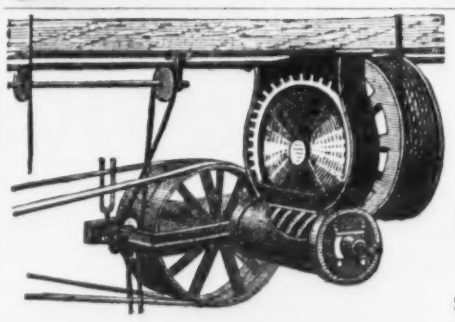

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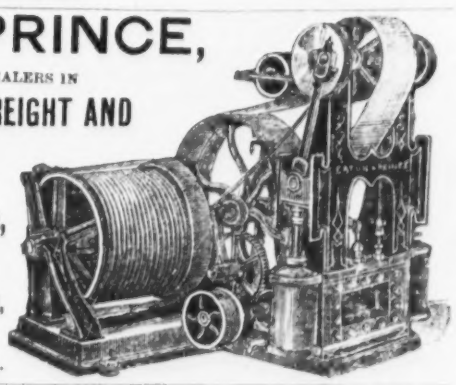

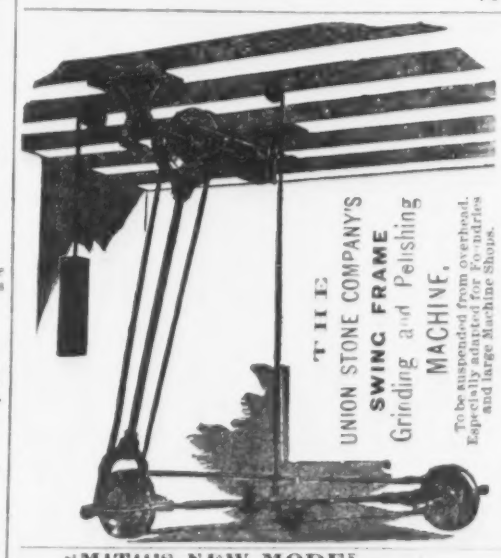

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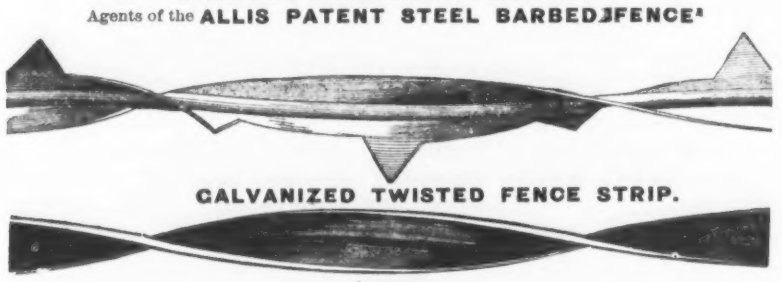

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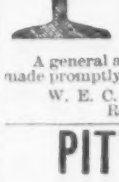

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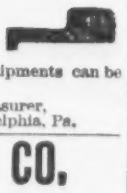

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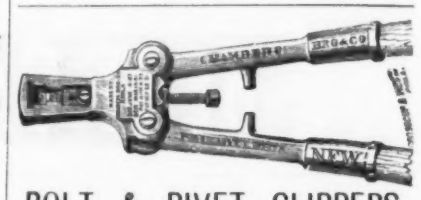

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Calvin Pardee & Co. HOLLYWOOD.

Pardee, Sons & Co. MT. PLEASANT

LIST OF

TRADE MARKS, BRANDS, &c.

IN ORDER to meet a decided and constantly growing want, as made known and emphasized by almost daily inquiries asking for names and addresses of makers of iron, tools, tin plates, hardware, steel, machinery, oils, varnishes, japans, &c., &c., it has been decided to include in the

Ironmonger Diary and Text Book for 1884

(now in course of preparation) as complete a list as possible of trade-marks, brands, specialties, &c., made and in use in all parts of the world.

This list will exclude all ordinary trade announcements proper, and will be strictly confined to trade-marks and brands, whether blocks, electros, or other appliances for illustrations, with just sufficient letter-press to describe the kind of article to which the mark, &c., is applied, and the names and addresses of the owners or lawful users. For the sake of uniformity in space and charges, each mark will occupy a space measuring 1 inch deep by 1½ inches wide, and the uniform charge will be $2.50 (10s.) only for each such space, payable in advance, unless we have already an open advertising account with the firm giving the order.

The advertisements so inserted will be printed on colored paper, **classified under suitable heads,** and so arranged as to make them both effective and useful.

Blocks or electros, &c., of marks or brands which may be too large will be reduced by us at cost price (roughly $1 each) to the requisite size on receipt of remittance along with the cash for the cost of advertisement.

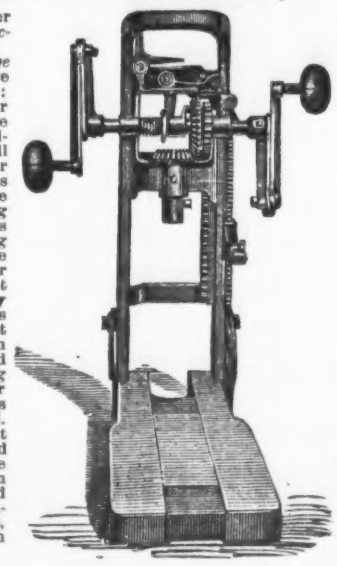
AMERICAN MANUFACTURERS AND EXPORTERS

of agricultural machinery and implements, "notions," general machinery, axes, hatchets and tools generally, nails, cutlery, electro-plated wares, clocks, safes, watches, oils, varnishes, japans, petroleum, paints, &c., &c., are strongly advised to take advantage of this excellent opportunity of placing their marks, &c., in a list which is certain to be constantly referred to all over the world, and especially (besides **Great Britain**) in **Australia, New Zealand, India, Ceylon, South Africa,** the **West Indies,** and the British Colonies of North America.

Particulars, blocks or electros, and remittances, may be forwarded through any of the offices of the *Iron Age*, or direct to the publisher,

42 CANNON ST., LONDON, E. C.

SAUNDERS' PATENT
AUTOMATIC BORING MACHINES
FOR BUILDERS' AND FRAMERS' USE,



are universally acknowledged to be superior to all other *Boring Machines*, and we *guarantee* to give better *satisfaction* than any other machine.

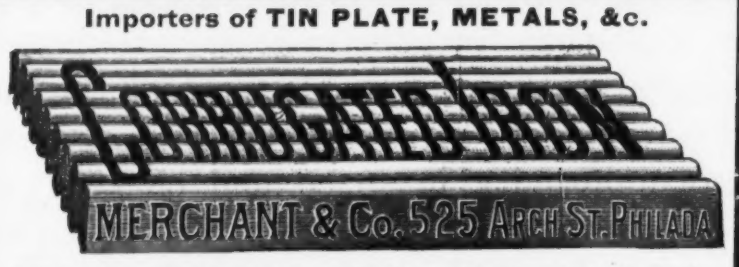
Ship Builders, House Builders, Dock Builders, Bridge Builders, Carpenters and *Farmers* please notice what we claim for our machine, and we guarantee all thatwe claim: First, that it will do nearly double the work of any other machine in the same length of time, with greater ease to the operator; that we can regulate the speed of the bit according to the size of the same, or to suit the operator; it will drive the bit any required speed; it will drive the bit or auger to any required depth, and the bit or auger returns from the hole by the same automatic motion without the operator stopping the machine; at the same time clearing itself and leaving the hole entirely free from chips; it is gauged to bore such a depth as may suit the operator, boring two or more holes at exactly the same depth after being once set, without any attention from the operator; it is an angular machine and will bore on any angle; it is the most compact machine; it can be placed in so small a compass as to occupy but little room in a carpenter's tool chest, and while in this compact form it can be carriedin the hand with the greatest ease and convenience; it is the most durable machine, from the fact that we use the best materisl in its construction, and each part can be duplicatedin case of accident by send ing directly to us. We finish the ironwork with a baked or heated Japan finish which enables it to withstand all kinds of weather, the woodwork being rubbed in oil and shellaced. They are the cheapest Boring Machines in the world for what they can do. We are introducing the Gladwin Improved Auger in connection with this machine. This auger is the best Boring Machine Auger made, being a self-clearer in gummy or knotty wood. We offer the Borer, boxed and delivered on board cars, for **$6.** with full set Gladwin Improved Augers, 18 qrs., **$9**; or with extra finished beds, **$6.50**, and full set augers, 18 qrs., **$9.50**. A discount given for large orders. Send for Descriptive Catalogue.

THE W. B. WELLS MFG. CO., Ashaway, R. I.

FOR SALE BY

LOUDERBACK, GILBERT & CO., 33 Chambers St., New York.
TALLMAN & McFADDEN, 607 Market Street, Philadelphia.
BUHL, SONS & CO., Detroit, Mich.
A. W. BINGHAM & CO., Cleveland, Ohio.
GORDON HARDWARE CO., San Francisco, Cal.
HODGE & HOMER, 47 Randolph Street, Chicago Ill.

Importers of TIN PLATE, METALS, &c.



STOVE BOARDS, ZINC AND CRYSTAL,
Iron Clad Can Trimmings, Solder, &c.

MANUFACTURERS OF

GENUINE BRONZE, BRASS, AMERICAN BRONZED AND JAPANNED

HARDWARE,

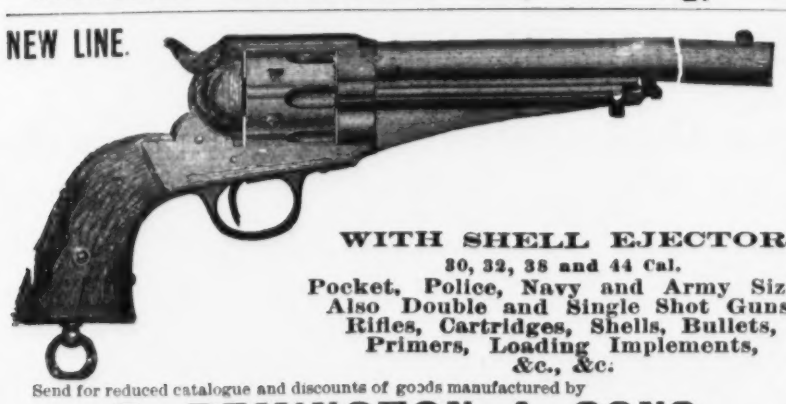
Rim and Mortise Locks, Knobs and Escutcheons,

Apple Parers, Registers, Bronze and Cast Butts,

STATIONERS' HARDWARE, &c.,

READING HARDWARE CO., Reading, Pa.

NEW LINE.



WITH SHELL EJECTOR
30, 32, 38 and 44 Cal.
Pocket, Police, Navy and Army Sizes.
Also Double and Single Shot Guns, Rifles, Cartridges, Shells, Bullets, Primers, Loading Implements, &c., &c.

Send for reduced catalogue and discounts of goods manufactured by

E. REMINGTON & SONS,
283 Broadway, - - - - NEW YORK.

WROUGHT IRON TACKLE BLOCKS,

Swivel Hooks for Rope or Chain,

POLISHED GROOVES, ALL SIZES IN STOCK.

Also Pulley Blocks for Wire Rope,

Headquarters for the

IRVING BRAND WOODEN PULLEY BLOCKS,

McCOY & SANDERS, Manuf'turers,
26 Warren Street, New York.

Improved Champion Dump Scraper.

We are the exclusive manufacturers of

Byrket's Improved Dump and Automatic Steel Scrapers.

We manufacture the only successful Automatic Scraper in the world. Our Dumps are the lightest and strongest scrapers made. We use two pieces of steel pressed into shape, which is superior to the old method of using but one piece, for when that breaks the whole scraper is ruined, while ours is so constructed that we can replace any part at a trifling expense. We make three sizes, to meet the wants of all classes of Earth Workers. Especially suited for Contractors and Township Road Work. Send for circulars. Manufactured by

THE CHAMPION SCRAPER CO., Troy, Ohio.

CLEVELAND FLUE CLEANER MANUFACTURING CO.,

The most simple, durable and economical steam flue cleaner.

It saves from 15 to 25 per cent. in labor and fuel.

Send for Circular and Price List of Cleaner and Hose. 22 & 24 POWER BLOCK CLEVELAND O.

GEO. B. CARPENTER & CO
DEALERS IN
SUPPLIES
FOR ROLLING MILLS
MANUFACTORIES
MINING
COMPANIES
& RAILWAYS
WESTERN AGENTS FOR
H.W. JOHNS'
ASBESTOS
LIQUID PAINTS
STEAM PACKING, MILL BOARDS
ROOFING, BOILER COVERING
GASKETS, FIRE PROOF COATINGS
CEMENTS & C.
SEND FOR CIRCULARS
202 & 208 S. WATER ST. CHICAGO.
MENTION THIS PAPER

AGENTS IN ALL FOREIGN COUNTRIES.

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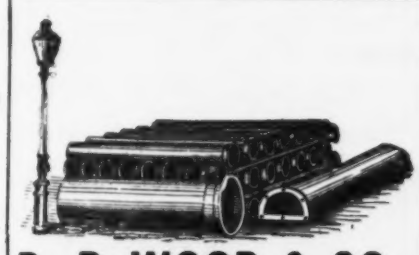
C. HOWSON, Attorney at Law and Counsel in Patent Cases.
SEND FOR CIRCULARS.



R. D. WOOD & CO.,
Philadelphia,
Manufacturers of
Cast Iron Pipe
FOR WATER AND GAS,
Lamp Posts, Valves, &c.,
Mathew's Pat. Anti-Freezing Hydrants
400 CHESTNUT STREET.

THE LITTLE GIANT

Wagon Tire Upsetter.
The Cheapest and Best.
LITTLE GIANT MFG. CO.,
Send for Circular. Millport, N. Y.

ECLIPSE ELECTROTYPE AND ENGRAVING CO.
147 ST. CLAIR ST.
CHAS. W. DEAN — CLEVELAND, OHIO.

ICE CREAM FREEZERS,
TORREY'S PATENT,
S. ROEBUCK & CO.
Manufacturers,
164 FULTON ST.,
NEW YORK.

MACHINERY FOR
Straightening and Cutting Wire
Of all Sizes to any Length.
Send for Catalogue.
JOHN ADT,
New Haven, Conn., U. S. A.

Prouty's Patent
PEERLESS FORCE PUMP.
Has Self-Adjustable Foot Rest.

NEW AUTOMATIC COMPENSATING PACKING.

It will throw a continuous jet FROM FORTY TO SIXTY FEET. A new pattern jet and spray nozzle is sent with each pump.

Especial attention is called to the material and workmanship exhibited in these pumps.

LIST PRICE, $8.

THE NEW ENGLAND BUTT CO.
PROVIDENCE, R. I.
NEW YORK OFFICE, 99 Chambers St.

THE AMERICAN BOLT AND SCREW CASE CO.,
DAYTON, - - - - OHIO.
MANUFACTURERS OF
REVOLVING BOLT AND SCREW CASES.

We are the only manufacturers of Bolt cases and the only parties who make lists of Bolt or Screw Cases to suit stock of purchaser without extra charge. All goods guaranteed. Send for Illustrated Circular.

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Markley, Alling & Co., Chicago; Ducharme, Fletcher & Co., Detroit, Mich.; Burger & Baumgard, New York City; Lloyd, Supplee & Walton, Philadelphia, Pa.; Buehler, Bombright & Co., Philadelphia, Pa.; Samuel C. B. Cook & Co., Baltimore, Md.; Bindley Hardware Co., Pittsburgh, Pa.; A. F. Shapleigh & Cantwell Hardware Co., St. Louis, Mo.; Farwell, Ozmun & Jackson, St. Paul, Minn.; Howell, Gano & Co., Cincinnati, O.; Pappenheimer Hardware Co., Cincinnati, O.; Hall & Wilies Hardware Co., Kansas City, Mo.; Pratt & Co. Buffalo, N. Y.; Seeberger, Breskey & Co., Chicago, Ill.; H. O. Stratton, Boston, Mass.; Shulz & Hosen, St. Joseph, Mo.; Wyeth Hardware Co., St. Joseph, Mo.; A. Baldwin & Co., New Orleans, La.; Gorden Hardware Co., San Francisco, Cal.; Kilbourn, Jones & Co., Columbus, O.; Morley Bros., East Saginaw, Mich.

We are also extensive manufacturers of **Fruit Can Sealing Wax.** Send for Circulars and Prices.

Very Respectfully,

THE AMERICAN BOLT & SCREW CASE CO.

MORSE TWIST DRILL AND MACHINE CO.
NEW BEDFORD, MASS., Sole Manufacturers of
Morse Patent Straight-Lip Increase Twist Drill,
Beach's Patent Self-Centering Chuck, Solid and Shell Reamers,
BIT STOCK DRILLS,

DRILLS FOR COES, WORCESTER, HUNTER AND OTHER HAND DRILL PRESSES. BEACH'S PATENT SELF-CENTERING CHUCKS, CENTER AND ADJUSTABLE DRILL CHUCKS, SOLID AND SHELL REAMERS. DRILL GRINDING MACHINES. TAPER REAMERS, MILLING CUTTERS AND SPECIAL TOOLS TO ORDER.

All Tools exact to Whitworth Standard Gauges.

GEO. R. STETSON, Supt. EDWARD S. TABER, Treas.

BEECHER & PECK

Successors to Milo Peck, Manufacturers of

PECKS DROP PRESS

PECK'S DROP LIFTER is the only one which has its parts cushioned. Being thus cushioned they are the most durable Lifter in the market.

Can be attached to any drop now in use.

Send for Illustrated Catalogue.

Cor. Lloyd and River Sts. **New Haven, Conn.**

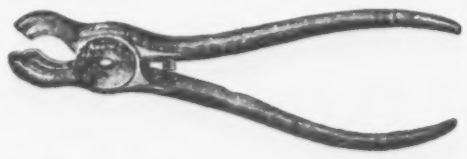
V. G. HUNDLEY,
PROPRIETOR OF
NORTH CAROLINA HANDLE CO.

MANUFACTURER OF
Handles and Spokes,
79 Reade Street and 97 Chambers Street, - - - - NEW YORK.
HARDWARE COMMISSION MERCHANT.

BLAIR'S PATENT BOSS HOG AND PIG RINGER.

Will close almost all kinds wire rings. The most economical to buy, to sell and to use.

Fruit Jar Caps and Wires, ½ gross in box; price, per gross, 65 cents.



MANUFACTURED BY

E. BLAIR, Bucyrus, Ohio.

PHILADELPHIA.

Corrected Weekly by Lloyd, Supplee & Walton.)

Terms, 30 days. For 60 or 90 days, interest added at 10¾ per cent. per annum.

Anvils.
Peter Wrights, ₱ ℔ ..... 11 @ 11¼c
Over 200 lbs. 11¼c
Trenton 10½
Eagle Anvils, American, 10c ..... dis 20 %

Apple Parers.
Globe Apple Pearers ..... $5.50 net
Penn Apple Parers ..... $5.50 net
Lots of 10 to 25 dozen special prices

Axes.
Hunt's Kentucky and Yankee, per doz ..... $8.50 @ 9.00
Robert Mann ..... $8.00 @ 8.50
Richland Chief ..... " $7.50 @ 8.00
Beveled Axes ..... " add 50c net
Double Bit Axes ..... net " $14.50 @ 15.50

Augers and Auger Bits.—New List January 7, 1880.
Bates' Nut Augers ..... dis 45@55 %
Cook's Augers ..... dis 40&10 %
Watrous' Ship Augers ..... dis 15 %
Benjamin Pierce Auger Bits ..... dis 40 %
Griswold Auger Bits ..... " dis 50@55 %
Cook's " ..... dis 40&10 %
Jennings' " ..... dis 10, 10&10 %
Bonney's Pat. Hol. Augers, list $48 ₱ doz. ..... dis 24&10 %
Stearns' Pat. Hol. Augers, list $48 ₱ doz. ..... dis 20&10 %

Balances.
Light and Common ..... dis 33⅓ %

Bells.
Bevin Bros. Mfg. Co. Light Hand Bells ..... dis 70 %
Swiss Pattern Hand Bells ..... 60 %
Connell't Door Bells ..... dis 15&10
Gt. Western & Kentucky Cow new list ..... dis 60

Boring Machines
Upright, without Augers ..... List 5 50 / 6.75 } dis 45@50 %
Angular, without Augers ..... " }

Bolts.—Eastern Carriage Bolts ..... dis 80&15 %
Philadelphia " ..... new list dis 70&10 %
Stanley, Wrought Shutter ..... dis 50&10 %

Braces.—Barber's ..... dis 40&5 %
Backus ..... dis 50 %
Spofford ..... dis 50&5 %
American Ball ..... dis 55 %

Butts.—Cast Fast Joint, Narrow ..... dis 45&10&10 %
" " " Broad ..... dis 45&10&10 %
Cast Loose Joint, Narrow ..... dis 55&10&10 %
" " Broad ..... dis 55&10&10 %
" Acorn, Loose Pin ..... dis 50&10&10 %
" " Jap'd ..... dis 60&10&10 %
" Mayer's Loose Joint ..... dis 60&10&10 %
Wrought Loose Pin ..... dis 55&10 %
" Table Hinges and Back Flaps ..... dis 50&10 %
" Narrow, Fast ..... dis 50&10 %
" Loose Joint ..... dis 55&10 %

Blind Butts.
Parker ..... dis 70&2 %
Clark ..... dis 70&2 %
Shepard ..... dis 70 %
Lull & Porter ..... dis 70&10 %
Huffer's ..... dis 50 %

Chains.—German Halter and Coil, list December 31 1881 ..... dis 50@55 %
Galvanized Pump ..... ₱ ℔ 95c net
Best Proof Coil Chain—English.

₱ ℔	12	8¼	7/8	6¼	6	5¾	gold.
	9-16	¾	5-16	⅜	7-16	½	in.

Chisels.—Socket Framing ..... dis 65&10 %
Socket Firmer ..... dis 65&10 %
Butcher's ..... ₱ doz. $6.00@$8.25 to £ gold

Casters.—Bed (new list July 1, 1880) ..... dis 45@50 %
Plate ..... dis 45@50 %

Coffee Mills.—Box and Side, new list Jan. 1. 1880 ..... dis 50 %
Enterprise ..... dis 25 %

Cutlery.—Walden Pocket ..... new list net
Penna. Knife Co ..... new list net
Landers, Frary & Clark, J. Russell & Co., Lamson & Goodnow Mfg. Co. and Meriden Cutlery Co., Manufacturers' prices net.

Drawing Knives.
Hart Mfg. Co.'s ..... dis 65&10 %
Adjustable Handle ..... dis 20 %

Dry Pans.
Tinned ..... dis 45 %
₱ doz. $3.50 4.00 4.50 5.00 5.50 6.50 7.50 9.00 10.00
No. 0 1 2 3 4 5 6 8
Burnished ..... dis 60, 10 & 5 %
₱ doz. $3.00 3.75 4.25 4.75 5.25 6.00 7.00 8.50 9.00
No. 0 1 2 3 4 5 6 7 8

Files.
Nicholson ..... dis 45 %
Disston ..... dis 45 %
Butcher ..... 60 %

Fluting Machines.
Eagle—3¼ in. roll ..... each, $2.15 } dis 35 %
" —4¼ in. roll ..... " 2.85 }
Crown—4¼ in. roll ..... " 3.50 }
" —6 in. roll ..... " 4.00 } dis 35 %
" —8 in. roll ..... " 6.50 }
Geneva Fluter ..... dis 25 %
Favorite corn Fluter & Sad Iron ..... ₱ doz $10.50 net

Hammers.
Yerkes & Plumb's, new list ..... dis 30 %
Maydole Hammers ..... dis 15 %
Howell A. E. Nail Hammers, ... per doz. net $3.75

Handles.
Disston Loop Handles Crosscut ..... 33c pair net
Boynton Loop Handles Crosscut ..... 13c pair net

Hatchets.
Yerkes & Plumb, new list ..... dis 30 %
Hunt ..... dis 25 %

Hinges.
Strap and T ..... dis 60&10&2 %

Horse Nails.

Nos.	5	6	7	8	9	10	
Globe	24	21	19	18	17	16	dis 12½ %
Vulcan	26	23	21	20	19	18	dis 12½ %
Ausable	30	27	25	24	23	22	dis 30&10 %
" Pol'ed and P't'd	31	28	26	25	24	23	dis 30&10%
" Polished & P't'd	31	28	26	25	24	23	dis 40&10%
Clinton	25	23	21	20	19	18	dis 40&10%
" Polished & Pointed	24	22	21	20		19	dis 50&10%

Hay and Straw Knives.
Lightning ..... per doz. net $18.00
Electric ..... " " 15.00
Wadsworth ..... " " 10.50
Walton Straw Knives ..... " " 17.00

Locks and Knobs.
Branford ..... new list dis 40&2 % cash
Gaylord Cabinet ..... dis 4 %
American Padlocks ..... dis 30, 10&2 % cash
Scandinavian Padlocks ..... dis 60 %
₱ doz. $4.00 5.40 6.50 7.50 8.50 10.00 12.50 } dis 60 %
No. 57 58 59 60 61 62 63 }
₱ doz. $18.00 26.00 33.00 } dis 60 %
No. 64 65 66 }

Lanterns.
Buckeye ..... Large list net; small list net
Tubular ..... No. 0, $7.50; No. 1, $9 00 ₱ doz net

Lawn Mowers.—Pennsylvania ..... } new list
Philadelphia " } new list
Excelsior " } dis 30 %

Lawn and Garden Pumps.
Holland Patent ..... List $5.00 dis 10 %

Mattocks.
Long and Short Cutter ..... new list ..... 50 %
Pennsylvania Pattern ..... dis 50 %

Molasses Gates.
Enterprise Mfg Co 's Measuring Faucets ..... dis 5 %
Stebbins' Gates ..... dis 70X10%
Lincoln's " ..... dis 60&10 %
Landers, Frary & Clark's Petroleum ..... dis 20&10 %
Brass Liquor Cocks, new list Jan. 1 1880 ..... dis 15 %
Cork Lined " ..... dis 70 %

Meat Cutters.
Dixon's ..... dis 25&5 %
Woodruff ..... dis 25&5 %
Stowe ..... dis 25&5 %
Hale's ..... new list, dis 50, 10&2 cash
American ..... dis 20&10 %
Stuffers ..... dis 25&5 %
Enterprise Stuffers ..... dis 25 %

Planes.—Sandusky Tool Co ..... dis 20 %
Ogontz ..... dis 25 %
Ohio & Auburn ..... dis 20 %
Bailey (S. R. & L. Co.) ..... dis 20&10 %

Plane Irons.—Ohio Tool Co ..... dis 25&10 %
Butcher's ..... $5.00@$5.25 to £

Plumbs and Levels.
Stanley's Adjustable ..... dis 65&10 %
" Non-Adjustable ..... dis 65&10 %

Picks.—New list ..... 60 %

Razor Strops.
Lamont Combination ..... per doz. $4.00
" " ..... 1 gross lots $42.00
Imitation Emerson ..... per doz. 2.00

Rules.—Stanley Boxwood ..... dis 70 %10 %
Stanley Ivory ..... dis 55&10 %

Steelyards.—Hart's Pattern ..... dis 40&10 %
₱ doz. $14.40 17.75 21 00 26.40 31 00 35.40
Lbs 50 100 150 200 250 300
American Pattern ..... dis 40&10 %
₱ doz. $8.00 10.25 13.75 15.60 10.75 19.50
Lbs. 50 100 150 200 250 300

Squares.
Steel and Iron ..... dis 50; full case dis 50&10&2 for cash
Try Squares, Stanley ..... dis 50&10 %
Disston's Try Squares ..... dis 40 %

Scythes.—Golden Clipper, Damascus Blade, Boxed and Sharpened ..... ₱ doz $9.00
Clipper No. 10, Bronzed Blade, Boxed and Sharpened ..... ₱ doz $8.50 } 30
Clipper No. 5, Painted Red, Boxed and Sharpened ..... ₱ doz $8.00 }

Saws.—Disston's Hand, Panel and Rip ..... dis 20 %
Disston's Circular ..... dis 40 %
Cross-Cut No. 2, Plain Tooth ..... dis 40%
" Patent Tooth ..... dis 40%
" Champion Tooth ..... dis 40%
Boynton's Lightning Cross Cut, new list ..... dis 40 %
" Lightning Buck Saws, cross bar ..... dis 40 %

Shovels and Spades.
Oliver Ames & Sons, new list ..... dis 15 %
Griffiths ..... dis 50@50&5
Rowland ..... dis 50@50&5
Sad Irons.—4 to 10 lbs ..... ₱ ℔ 3½@
Mrs. Potts' Patent ..... dis 35 %

Stone.
Washita Extra ..... ₱ ℔ 23½
" No. 1 ..... " 18c
" No. 3 ..... " 12c
" Slips ..... " 30c
" Axe ..... " 130 net
Hindostan Oil Stone No. 1 ..... ₱ ℔ 60 } dis 33⅓ %
" Axe Stone ..... " 80 }
" Slips ..... " 10c }

Screws.
Flat Head Iron, new list Dec. 27 ..... dis 45 %
Flat Head Brass, new list Dec. 27 ..... dis 45 %
Round Head Brass, new list Dec. 27 ..... dis. 40 & 10 %
Round Head Iron, new list Dec. 27 ..... dis. 45 & 10 %

Spoons.
Plated ..... dis 45 &10 & 5 %
German Silver ..... dis 30 & 10 & 5 %
Britannia, Boardman's ..... dis 60&10 %
" Parker's ..... dis 60&10 %
Tinned ..... dis 10 %

Springs.—Torrey ..... dis 50 %
Gem No. 3 small Jap'd ..... $2.00 } dis 50 & 10 %
" No. 2 medium Jap'd ..... 2.75 }
Coil No. 70, per gross net $6.00
Other Standard Springs ..... dis 60&10 %
Warner Door Springs, per doz. net 1.75
Standard Spring Hinges—
Single No. 0, per doz. net 1.25
" No. 1 " " 1.80
Other Standard Spring Hinges ..... dis 20&10 %

Stocks and Dies. ..... dis 10&5 %

Stove Polish.—Gem ..... ₱ gross, $1.50, dis 5 %
Dixon ..... " 6.00, dis 10%
Fire Fly ..... $3.00 gross net

Tacks.
Shoe Nails—4-8, and over 8c ..... } 10 %
" " 3½-8, and under 9c ..... }
Double Pointed Tacks ..... dis 40&5 %

Traps.
Genuine Oneida—Newhouse ..... dis 35 %
Im. Oneida—Newhouse list, first qual dis 55&5@60 %
Vises.—Solid Box Trenton new list ..... dis 35 %

Wrenches.—Agricultural ..... dis 70 %
Coes' Genuine ..... dis. 50&3 %
Coes' Mechanics' ..... dis. 50&10&5 %
" " Mail. Bar ..... dis 75 %

Wire.
Bright or Ann'd, No. 0 to 18 ..... dis 57½@60 %
" No 19 to 26 ..... dis 60@65 %
" No. 27 to 36 ..... dis 62½@70 %
Coppered, 0 to 18 ..... dis 50@50½ %
Tinned Broom Wire ..... dis 57½@60 %
Galvanized Barb Wire 7¼c
Painted Barb Wire 6¾c
Galvanized No. 7 to 18 ..... Market List, dis 35@37 ½ %

Wringers.
Peerless No. 2½ $42.00
" No. 2 ..... 45 00
Universal No. 2½ 42.00
" No. 2 ..... 45.00
Novelty No. 2, for common tubs 42 00
" No. 3, " " 48.00
Excelsior E, for stationary tubs 51 00
" F " " 57 00
In lots of 1 doz. $3.00 doz. dis. from above price.

PITTSBURGH.

Merchant Iron.

TERMS.—Note or acceptance at 60 days, with current rate of exchange on New York, or a discount of 2 per cent. for cash, if remitted within 10 days from date of invoice.

For fluctuations and discounts on card rates see weekly Pittsburgh Trade Report.

The following are card rates.

Flat Bar.

1¼ to 4 by ⅝ to 1 inch 2.5c
4¼ to 6 by ⅜ to 1 " 2.6c
1⅝ to 6 by 1¼ to 1¾ " 2.6c
1¾ and 1⅝ by ⅜ to ¾ " 2.6c
1 and 1¼ by ⅜ to ¾ " 2.7c
⅝, ¾ and ⅞ by ⅜ to ¾ inch 2.9c

Rounds and Squares.

1 to 1¾ ..... 2.5c | ⅜ to 9-16 ..... 2.7c
2 to 2¾ ..... 2.7c | ½ to 7-16 ..... 2.9c
2¾ to 3¼ ..... 3.0c | ⅝ 3.1c
3¾ to 4 ..... 3.5c | 5-8 ..... 3.3c
4¼ to 5 ..... 4.0c | ¾ 3.5c
5¼ to 7 ..... 2.6c | 7-8 ..... 5.5c

Oval Iron.

1¼ to 1¾ ..... 2.9c | ⅜ 3.3c
2¼ to 3¼ ..... 3.1c | ½ 3.7c

Half Oval and Half Round.

1¼ to 1¾ inch ..... 3.20 | ⅜ inch 4.0c
2¼ to 3¼ " ..... 3.70 | ½ " 5.5c

Horse Shoe.

⅝ to 1¾ by 5-16 to ⅞ inch 3.5c

Wagon Box Iron.

¾ inch, Nos. 13 and 14 ..... 3.7c
¾ " " 11 and 12 ..... 3.5c
¾ " " 13 and 14 ..... 4.0c
¾ " " 11 and 12 ..... 3.8c
¾ " " 13 and 14 ..... 4.4c
¾ " " 11 and 12 ..... 4 1c

Heavy Bands.

3¼ to 6 by ⅜ and 5-16 inch 2.7c
1¾ to 3¼ by ¼ and 5-16 " 2.7c
1 to 1¾ by ¼ and 5-16 " 2.8c
¾ to 3¼ by ¼ and 5-16 " 3.0c
⅝ and ¾ by ¼ and 5-16 " 3.5c

Light Bands.

1¾ to 6 by ⅛ to 3-16 ..... 3.0c
1¾ to 6 by Nos. 11 and 12 ..... 3 1c
1 to 1¾ by ⅛ to 3-16 ..... 3.1c
1 to 1¾ by Nos. 11 and 12 ..... 3.2c
⅞ and 13-16 by ⅛ to 3-16 ..... 3.4c
⅞ and 13-16 by Nos. 11 and 12 ..... 3.5c
¾ and 11-16 by ⅛ to 3-16 ..... 3.7c
¾ and 11-16 by Nos. 11 and 13 ..... 3.8c
¾ and 9-16 by ⅛ to 3 16 ..... 4.0c
¾ and 9-16 by Nos. 11 and 12 ..... 4.1c
⅝ inch by ⅛ and 3-16 ..... 4.3c
⅝ inch by Nos 11 and 13 ..... 4.1c

Hoop Iron.

1¾ to 4, Nos. 13, 14 and 15 ..... 3.3c
1¾ to 2, Nos. 16, 17 and 18 ..... 3.4c
1¾ to 2, No. 19 ..... 3.5c
1¾ to 2, No. 20 ..... 3.6c
1¾ to 2, No. 21 ..... 3.7c
1¾ to 2, No. 22 ..... 3.8c
15-16 1, and 1¾, Nos. 13, 14 and 15 ..... 3.5c
15-16, 1, and 1¾, Nos. 16, 17 and 18 ..... 3.6c
15-16, 1, and 1¾, Nos. 19 and 20 ..... 3.7c
15-16, 1, and 1¾, No. 21 ..... 3.8c
15-16, 1, and 1¾, No. 22 ..... 3.9c
⅞, Nos. 13, 14 and 15 ..... 3.7c
⅞, Nos. 16, 17 and 18 ..... 3.8c
⅞, Nos. 19 and 20 ..... 3.9c
⅞, No. 21 ..... 4.0c
⅞, No. 22 ..... 4.1c
13-16, Nos. 13, 14 and 15 ..... 3.9c
13-16, Nos. 16, 17 and 18 ..... 4.0c
13-16, Nos. 19 and 20 ..... 4.1c
13-16, No 21 ..... 4.2c
13-16, No. 22 ..... 4.3c
¾, Nos. 13, 14 and 15 ..... 4.0c
¾, Nos. 16, 17 and 18 ..... 4.1c
¾, Nos. 19 and 20 ..... 4.2c
¾, No. 21 ..... 4.3c
¾, No. 22 ..... 4.4c
11-16, Nos. 13, 14 and 15 ..... 4.2c
11-16, Nos. 16, 17 and 18 ..... 4.3c
11-16, Nos. 19 and 20 ..... 4.4c
11-16, No. 22 ..... 4.5c
⅝, Nos. 13, 14 and 15 ..... 4.3c
⅝, Nos. 16, 17 and 18 ..... 4.4c
⅝, Nos. 19 and 20 ..... 4.5c
⅝, No. 21 ..... 4.6c
⅝, No. 22 ..... 4.7c
⅝, No. 23 ..... 4.8c
9-16, Nos. 13, 14 and 15 ..... 4.4c
9-16, Nos. 16, 17 and 18 ..... 4.5c
9-16, Nos. 19 and 20 ..... 4.6c
9-16, No. 21 ..... 4.7c
9-16, No. 22 ..... 4.8c
9-16, No. 23 ..... 4.9c
⅝ " Nos. 13, 14 and 15 ..... 4.5c
⅝ " Nos. 16, 17 and 18 ..... 4.6c
⅝ " Nos. 19 and 20 ..... 4.7c
⅝ " No. 21 ..... 4.8c
⅝ " No. 22 ..... 4.9c
⅝ " No. 23 ..... 5.0c

The prices under Hoop Iron do not apply to Cotton Ties.

1-10c per lb. extra will be charged for each gauge lighter than the lightest indicated.

1-10c per lb. extra will be charged for cutting Hoops to specified lengths.

Barrel Hoops.

1¼ to 2 in., cut to length.

9 to 11 lbs, per set of 6 hoops 3.5c
8 lbs. and less than 9 lbs. per set of 6 hoops 3.6c
Less than 8 lbs. per set of 6 hoops 3.8c

Extras for Cutting to Length all Preceding Iron.

All Iron, including Tire 1.10c

Tank Iron.

No. 9 and heavier 3.3c
Plow Slabs 3.5c
" Wings 3.8c

Sheet Iron.

	Common.	Charcoal	Juniata.
No. 10 to 14	3.4c	4.0c	6.5c
No. 15 to 17	3.8c	4.3c	6.8c
No. 18 to 21	4.1c	4.6c	7.1c
No. 22 to 24	4.3c	4.8c	7.3c
No. 25 & 26	4.4c	5.0c	7.5c
No. 27	4.7c	5.2c	7.7c
No. 28	5.1c	5.6c	8.1c

All sheet No. 18 and lighter, over 30 inches wide, not less than 2.10c extra.

Wood's Patent Planished Sheet.

1st quality (A) ..... 10½c | 2d quality (B) ..... 9 c

Galvanized C. H. B.—(Charcoal Hammered Blooms.

Nos. 14 to 20	12c	No. 27	15c
Nos. 21 to 24	13c	No. 28	16c
Nos. 25 and 26	14c	No. 29	18c

45 @ 47½ % discounts.

Coal Screen Iron.

1¾ by ⅝ by 5-16 ..... 3.0c | 1 by ⅝ by 5-16 ..... 3.5c

Angle Iron.

2½, 3, 3½ and 4 inch 3.3c
1½, 1¾ 2 and 2¼ inch 3.3c
1¼ inch 3.4c
1 " 3.6c
1½ by 1 in 3b, for Plow Handles 3.8c
1½ by ¾ " " 3.8c
1⅜ by ¾ " " 3.9c

T Rail.

8 lbs. to the yard ..... 2.9c | 20 lbs. to the yard 2.8c
12 " " ..... 2.8c | 28 " 2.8c
16 " " ..... 2.8c | 30 " 2.8c

Splice Joints for 12, 16 and 20-lb. Rail, 40c each: 28 and 30 lb. Rail, 50c. each: 40 lb., 60c each.

3½ by ⅝ and ⅝ Spikes for 20 and 28-lb. Rail 3½c
2½ and 3 by ⅝ " " 12 and 16-lb. " 4c
2¼ by 5-16 " " 8 lb. Rail 4½c

Flat Rails.—Punched and Countersunk.

1¼ to 2 by ⅛ to ⅝ inch 3.0c
1½ by ⅝ and 7-16 inch 3.2c
1¼ by ⅜, 7-16 and ½ inch 3.4c

Junista Nail Rods 6.5c
Norway " 8.0c
Guard Iron 1¼x⅝x⅛ and 1¼x⅝x⅛ 4.0c
" ⅝x⅝x9-16 and ⅝x⅝x¼ 4.2c
Drag Bars 3.3c
Dropper Bars 3.8c
Cylinder and Landside Iron 3.2c
Plow Beam Iron 3.0c

Nails.

See Pittsburgh Trade Report.

Best Quality Refined Cast Steel.

Square, Flat, Octagon and Round.

⅛ to 2 inches, inclusive 10½c
1-16 and 2⅛ to 3 inches 11½c
¼ and 3¼ to 4 " 12½c
7-32 and 4⅛ to 5 " 13½c
5-16 and 5⅛ to 6 " 16c
5-32 inch 21c
⅛ inch 30c
Oil Well Steel Forgings 10c

Machinery Steel.

	Crucible.	Bessemer & Open Hearth
Ordinary Sizes, ⅜ to 2 inch Round	6c	5c
5-16 and 2⅛ to 3 inches	7c	6c
¼ and 3¼ to 6 "	8c	7c
7-32 inch	10c	8c
1-16 "	12c	10c

Square, Flat and Octagon, ½c extra throughout the list.

Cut to specified lengths, ½c extra.

Hammer Cast Steel.

Crucible Cast Steel 7c
Open Hearth Cast Steel 6c

Sheet Steel.—Crucible.

	Best.	2d Qual.	3d Qual.	Bessemer & Open Hearth.
To 21 gauge,	12c	11c	9c	7c

1c. extra for each additional gauge.

Cut to multiples or specified lengths, ½c. extra.

Miscellaneous Cast Steel.

Auger and Auger Bit 7c
Axle Steel for carriages and wagons 7c
Frog Points and Plates 7c
" Side Bars 6c
Pick, plain (hammered) 8c
" and Mattock, beveled (rolled) 7c
Skate Steel 7
Table Cutlery, plain 9c
Table Cutlery, beveled 9½c
Pike and Cant Hook 8c
Coal and Granite Wedge 8c
Roller 8c
Spindle, subject to Machinery classification 8c
Trap Spring Steel 9c
Forged Crank Pins and Lathe Spindles 9c
Piston Rods, plain 7c
" forged to shapes 9c
Slide Bars, plain 8c
" forged to shapes 9c

Crucible, Open Hearth or Bessemer.

Boiler, Fire-Box and Flue Sheets, not less than 5-16 thick 6c
Boiler, Fire-Box and Flue Sheets, not less than ⅜ thick 7c
Circulars and semi-circulars, when ordered separately 8c
Smoke Stack, to shape 7c
Locomotive Tank Steel 6c

File Cast Steel.

Square, Round, Half Round and Flat Bastard 8 inch and over 8c
Mill Saw, 8-inch and over 85c
Taper, 3½-inch and over 95c
Horse and Shoe Rasp ..... 8 c

Spring Cast Steel.

Spiral and Taper, cut to lengths 61c

Tire Cast Steel.

1x¼ and over ..... 8 c
1x3-16, ⅞x3-16 and ¾ 9c
1 and 13-16x¼ and 5-32, ¾x3-16 and 1-32 ..... 95c
¾ and ⅝x1½ and 3-32 and 12 g ..... 1 c
Solid Sate Cast Steel 75c
Tb ee and Five Ply Cast Steel 10c

Agricultural Implement Cast Steel

Fork and Rake, Crucible 6
Horse Rake Steel, cut to lengths, Crucible 7c
Hoe, Crucible 6c
Corn Stalk Cutter, beveled 7½
Beveled Hoe and Shovel Steel in Bars 7c
Crucible Plow Steel in slabs 9c

Bessemer and Open Hearth.

Spring 4½c
" spiral and taper, cut to lengths 5½c
Tire, 3-16 thick and above 4½c
Toe Calk 4½c
Plow 4½c
Axle Billets 4c
Sleigh Shoe 4c
Cutter Shoe, cut to lengths and tapered 5½c
Scythe Back Steel 4c
Grain Drill Bars 6c
" Points 7c
Rolling Coulter Blanks, cut and punched 9½c
Thrasher Steel 4½c
" Teeth 5½c
Rolled Hammer Billets 4½c

Terms.—Four months; 2 per cent. discount for cash, if remitted within 30 days.

Rolls and Castings.

Furnace Floor and Straightening Plates 1¾c
Housings and Castings not otherwise specified 2¾c
Guide Plates 3¼c
Spindles and coupling boxes 2½c
Sand Rolls and Pinions, large size ..... 5 c
" small size 3½c
Pipe Mill Castings ..... 5 c
Rolling Mill Castings under 40 lbs ..... 4 c
Spur and Bevel Wheels, large ..... 5 c
" " small 4½c
Pulleys up to 30 inches 4½c
" over 30 inches ..... 5 c
Engine Castings, light 4½c
" " heavy ..... 4 c

Chilled Rolls.

6 to 8 in. diam.,	to 30 in. long		4½c
8 to 14 in.	" 8 to 40 in.	"	4½c
25 to 24 in.	" 25 to 72 in.	"	4c
14 to 21 in.	72 to 108 in.	"	4c

After Oct. 1, 1881, no discounts will be made at settlement as heretofore, prices quoted being net.

White and Red Lead.

Strictly Pure White Lead in Oil, in kegs, 6½c.; in 25 ℔ Tin Pails, 5c. ℔ over keg price; 12½ ℔ Tin Pails, 10c ℔ over keg price; assorted, 1 to 5 ℔ cans, 3c. per ℔ over keg price.

Dry White Lead in barrels 6½c
Red Lead, very brilliant, in kegs, 6½c; in barrels 6½c
Litharge (Potter's Lead) 6½c
Freights equalized with all points where White Lead is made.

Terms: Note at sixty days, or if paid within 15 days from date of invoice a discount of 2½ per cent. will be allowed, but not otherwise.

Window Glass.

Discount, 70 % on Single Strength, 70 & 10 % on Double.

Single Strength.

Size.	AA.	A	B.	C.
5 x 8 to 10 x 15	$8.25	$7.50	$7.00	$6.50
11 x 14 to 16 x 24	9.25	8.50	8.00	7.25
18x 22 to 20 x 30	10.75	9.75	8.75	7.75
15 x 36 to 24 x 30	12.25	10.75	9.00	8.00
26 x 28 to 24 x 36	13.00	11.50	9.75	9.00
26 x 36 to 26 x 44	14.50	13.25	10.75	9.50
26 x 46 to 30 x 50	15.00	14.00	11.25	10.50
30 x 52 to 30 x 54	16.00	14 50	12.00	
30 x 56 to 34 x 56	17.25	15.50	13.50	
34 x 58 to 34 x 60	18.25	17.25	15.00	
36 x 60 to 40 x 60	20.75	18.75	17.25	

Double Strength.

5 x 8 to 10 x 15	12.75	11.75	10.75	10. 0
11 x 15 to 16 x 24	14.50	13.25	12.50	11.25
18 x 22 to 20 x 30	17.25	15.75	14.00	
15 x 36 to 24 x 30	19.75	17.25	14.50	
26 x 28 to 24 x 36	21.00	18.50	15.75	
26 x 36 to 26 x 44	23.25	21.25	17.25	
26 x 46 to 30 x 50	24.00	22.50	18.00	
30 x 52 to 30 x 54	25.75	23.25	19.25	
30 x 56 to 34 x 56	27.75	25.00	21.75	
34 x 58 to 34 x 60	29.25	27.75	24.00	
36 x 60 to 40 x 60	33.25	30.00	27.75	

An additional 10 per cent. will be charged for all glass more than 40 inches wide. All sizes above 63 inches in length and not making more than 81 united inches, will be charged in the 81 united inches bracket.

Hubbard, Bakewell & Co.'s Goods.

Axes, Single Bit, Lippincott ..... Per doz. $8.00
" " James & Co ..... " 7.00
" Double Bit, Lippincott ..... " 15.00
" " James & Co ..... " 12.00
Drain Tools, list ..... dis 20%
Hoes, Planters' ..... dis 55%
" Scovill Pattern ..... dis 55%
" Handled, Square Eye, German ..... dis 25%
Handles, Cross Cut ..... Per doz. $4.50
" Shovel, Bent, Bored, Riveted ..... " 2.50
Saws, Circular ..... dis 40%
" Long ..... dis 40%
" Cross Cut, H. B. & Co., Champion. Per ft. net $0.35
" Cross Cut, Lippincott, Champion. Per ft. net ..... .30
Shovels, list ..... dis 20%
Spades, " ..... dis 20%
Scoops, " ..... dis 20%

BOSTON.

Reported by Macomber, Bigelow & Dowse.

Anvil & Vise.—
No. 1, $5.25; 2, 4.25; 3, 3.50 each.....dis 25 %

Augurs & Bits.—Snell's Auger.....dis 40&10 %
L'Hommedieu's Ship Auger.....dis 15 %
Jenning's Bitts.....dis 10&10&10 %
Cook's Bitts.....dis 40&10 %
Shepardson's Double-Cut Bitts.....dis 45 %
Shepardson's Double Gimlets.....dis 40 %
Stearn's Extension Hollow Augers—
No. 2, ₱ doz., $48.00; No. 3, ₱ doz., $60.00 list, dis 20 %
Bonney's Extension Hollow Augers.....₱ doz $36.00
Pierce's Bitts.....dis 50 %
Griswold Bitts.....dis 60 %

Axes.—Blue Jackets.....₱ doz $9.00
Red Cross.....₱ doz 8.00
Red Cross Handled.....₱ doz 12.00
Dowse Handled Boys'.....dis 33⅓ %

Ax Handles.—
Oak Extra, 31 in., No. A.....₱ doz $2.50
Oak Extra, 34 in., No. A.....₱ doz 2.50
Oak Extra, 31 in., No. B.....₱ doz 2.00
Oak Extra, 34 in., No. B.....₱ doz 2.00
Oak Extra, 31 or 34 in., No. C.....₱ doz 1.40

Axle Clips......dis 50 %
Balances.—Chatillon's.....dis 33⅓ %

Barn Door Rail.—
Cast Angle (for Anti-Friction Hangers).....₱ ft. 20c
Cast Half Round.....₱ ft., ½, 30; ⅝, 40; ¾, 50
Wrought Round.....₱ ft., ½, 30; ⅝, 40; ¾, 50

Bells.—Connel's Crank Gong, reduced list..dis 15&10 %

Bird Cages.—
Japanned M. B. & D., reduced list, 1879.....dis 40 %
Brass M. B. & D., reduced list '80.....dis 33⅓ %

Blind Fasts.—Lock Fasts.....₱ C sets $5.00
No. 6 Fasts.....₱ C sets 6.00
Veazie Fasts.....₱ C sets 6.00
Shedd's.....₱ C sets 7.00
Blind Hinges.—Mall, Hook, 3 holes.....₱ C sets 7.00

Brad Awl Handles.—
Phœnix Adjustable.....₱ doz $2.00

Belts.—Norway Iron Carriage.....dis 75 %
Common Iron Carriage.....dis 80 & 10 %

Borax.—Refined.....₱ lb 15c

Boring Machines.—
Eagle Upright each.....$5.50 list } dis 40&10 %
Eagle Angle each.....6.75 list }
Snell Augers.....₱ set $2.45

Braces.—Barber's.....dis 40&5 %
Spofford's.....dis 40&5 %
Backus'.....dis 50&5 %

Bracket Saws.—Holly Scroll Saw.....each $2.25
Demas Lathe and Scroll Saw.....each 6.50
Bracket Saws, extra quality, to No. 5.....₱ gro 0.75
Steel Frame, with patterns.....₱ doz 6.50
Lester.....dis 20 %
New Rogers, all iron.....dis 25 %

Bracket Saw Blades.—Griffith's pat.....₱ gross 75c

Brackets.—
B. B. & D., Flower Pot, reduced list.....dis 10&10 %
Bronzed Shelf, M. B. & D., new list.....dis 50 %
Store Shelf.....dis 40 %

Butts.—Union Fast Joint.....dis 10 %
Union Loose Joint.....dis 40&10 %
Union Japanned Acorn.....dis 55&10 %
Union Silvered Acorn.....dis 60&10 %
Union Boston Finish.....dis 70&10 %
Union Spiral Spring.....dis 25&10 %
Wrought Brass.....dis 60& 10%

Carriage Bolts.—Eagle Norway.....dis 70&10 %
Common.....dis 80 & 5 %

Carriage Jacks.—Climax No. 1.....₱ doz $27.00
Climax No. 1½.....₱ doz 18.00
Climax No 2.....₱ doz 13.50
Universal.....dis 25 %
Universal No. 1.....each $2.00
Universal No. 2.....each 3.00
Universal No. 3.....each 6.00
Universal No. 4.....each 6.00
Universal No. 4.....each 6.50

Cartridges.—U. S. Cartridge Co.....dis 70 %

Cards.—
Watson's make Horse & Curry dis 10 % } New List,
Watson's Cotton dis 10 % } July, 1881.
Watson's Wool dis 10 % }

Casters.—Bed and Table.....dis 50 %

Chain.—Traces 6½, 10, 4, straight.....₱ pair 80c
Traces 6½, 10, 4, twisted.....₱ pair 55c
Traces 7, 12, 2, twisted.....₱ pair 80c
Coil 3-16.....₱ lb 12½c
Coil ¼.....₱ lb 8½c
Coil 5-16.....₱ lb 7c
Coil ⅜.....₱ lb 6½c
Coil 7-16.....₱ lb 6c
Coil ½.....₱ lb 6½c
Chalk.—White, Carpenter's.....₱ gross 60c
Red, Carpenter's.....₱ gross 60c
Blue, Carpenter's.....₱ gross $1.00
Chisels.—Hart, Blivens & Mead, Framing..dis 60&10&10%
Underhill, Framing.....dis 25 %
Buck's Chisels.....dis 40 %

Clothes Line.—
Galvanized Wire, 100 feet each.....₱ doz $4.00
Coal Hods.—"Dover."—Galvanized, New List.dis 60%
Japanned, new list.....dis 60 %
Cocks.—Pexs. L. F. & Co.....dis 50 %
Coffee Mills.—New List.....dis 25 %
Copper Rivets......dis 50&10 %
Cordage.—Manila, usual trade dis 10.....₱ lb 12½c
Jute.....₱ lb 8c

Cow Ties......dis 33⅓ %
No. 30, 3 ft. No. 6 Wire, with toggle.....₱ doz $3.80
No. 30, 3 ft. No. 6 Wire, with snap.....₱ doz 4.00
No. 40, 3½ feet No. 6 Wire, with toggle.....₱ doz 4.30
No. 45, 3½ ft. No. 5 Wire, with snap.....₱ doz 4.50
No. 50, 4 ft. No. 4 Wire, with toggle.....₱ doz 4.75
No. 55, 4 ft. No. 4 Wire, with snap.....₱ doz 5.00
No. 60, 4½ ft. No. 3 Wire, with toggle.....₱ doz 5.60
No. 65, 4½ ft. No. 3 Wire, with snap.....₱ doz 5.80
Crow Bars.—Cast Steel.....₱ lb 7½c
Iron Steel-pointed.....₱ lb 6c

Cutlery.—Pocket American Shear Co.'s.....dis 40 %
Butcher Knives Wood's, Lap Bolster, Square Handle.....dis 30 %
Steak Knives.....dis 25 %
Lap Bolster, Oval Handle.....dis 20 %
Sticking.....dis 20 %
Skinning.....dis 30 %
Butcher, Common Round Handle, Wood's.....dis 20 %
Shoe Knives, Wood's.....dis 20 %

Dividers.—Cook's.....dis 25 %
Dog Collars......dis 20 %

Door Springs.—Torrey's Rod.....₱ doz $1.65
Imitation Torrey's Rod.....₱ doz 1.40
Gem Coil, new list.....dis 50 & 10 %
Crown.....₱ doz 1.25
Warner's.....₱ doz 2.00

Door Stops.—Thurston's.....dis 50 %
Drawer Knobs.—Thurston's.....dis 50 %

Drills.—Morse Bitt Stock.....dis 25 %
Morse Straight Shank.....dis 20 %

Emery.—Wellington Mills.....₱ lb 10c
Walpole Emery Mills.....₱ lb 6c
Turkish in 10 ₱ cans.....₱ lb 8c

Enameled Ware.—
Standard Mfg. Co. Kettles.....dis 40 & 10 %
Standard Sauce Pans.....dis 30 %

Felloe Plates.—Wrought.....₱ lb

Files.—American File Co.....dis 45 %
Nicholson File Co.....dis 45 %

Fluting Machines.—Knox list, $4.00.....dis 20 %
American list, $3.40.....dis 20 %

Forks.—W. C. & Co. Manure.....dis 50 %

Gimlet Bits.—
Genuine German, No. 125, 1-32 to 8-32, per doz $1.00
Pierce's.....per doz .80

Glass Cutters.—Combination Glass Cutter and Knife Sharpener.....₱ doz $1.00

Grub Hoes.—K. P. & Co.'s No 2, $11.40 ₱ doz..dis 40 %

Hammers.—Maydole's.....dis 10 %
Hartford Hammer Co.....dis 20 %

Hangers & Rollers.—Anti-Friction.....dis 60 %
Acme Rollers.....dis 40 %
Climax.....dis 40 %
Common Hangers.....dis 40 %
Common Rollers.....dis 40 %

Hand Screws......dis 10 %

Hatchets.—C. F. Dowse new list.....dis 33⅓ %
Underhill.....dis 30 %

Hay Knives.—Lightning.....₱ doz, $18.00, net
Fisher's Patent.....₱ doz $11.00

Hinges.—Strap and T (new list).....dis 60 %
Providence Plate.....₱ lb 6½
Wrought Screw Hook.....₱ lb 6½

Hoes.—W. C. & Co.'s.....dis 50 %

Hooks and Staples.—Brewers' (new list).....dis 60

Horse Nails.

	No. 6	7	8	9	
National Finished	.23	.21	.20	.19	dis 2 %
Putnam Pointed	.24	.22	.21	.20	5 %
Bridgewater	.21	.19	.18	.17	list

Ice Cream Freezers.—Packer's, new list.....dis 40 %

Knobs.—"Norwalk." New list.....dis 60 %
Silver Glass.....dis 50&10 %
Silver Glass Bell Pulls.....dis 50&10 %

Lanterns.—Tubulars, No 0.....₱ doz 8.00

Lawn Mowers.—The "Daisy."
12 in. cut.....each, $8.00
14 in. cut.....each 9.00
16 in. cut.....each 9.00
18 in. cut.....each 9.00

Lead.—Sheet.....₱ lb 7½c
Pipe.....₱ lb 6½c

Locks.—Norwalk.....dis 40 %
Eagle Cabinet.....dis 25 %
Eagle Trunk.....dis 15 %
W. Wilcox & Co., Padlocks.....dis 40 %

Manure Forks.—W. C. & Co.....dis 40 %

Mattocks.—
K. P. & Co., Long Cutter, $16.00 ₱ doz.....dis 50 %
K. P. & Co., Short Cutter, $15.50 ₱ doz.....dis 50 %
K. P. & Co., Pick Cutter, $16.00 ₱ doz.....dis 50 %

Measuring Tapes.—Eddy's.....dis 20 %

Meat Cutters.—Miles' Challenge.....dis 20 %
Hale's, (new list).....dis 40 & 10 %
American.....dis 25 %

Money Drawers.—Tucker's Am.....₱ doz $22.00

Mouse Traps.—Delusion.....₱ doz 1.40
Novelty.....₱ doz

Nails......₱ keg 3.15

Oilers.—Zinc and Tin.....dis 60 %
Brass and Copper.....dis 25 %

Ox Bows.—Extra finished and varnished.....dis 10 %
1¼ in., ₱ doz. pair...$7.00 | 2 in., ₱ doz. pair, $13.00
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Paper.—Tarred Sheathing.....₱ lb 2½
Tarred Eagle Brand.....₱ lb 2½

Picks.—K. P. & Co., Adze Eye, 4 to 6 ₱ $12.00.....dis 40 %
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Planes.—
Fancy Planes.....dis 10 %
Easee Planes.....dis 20 %
N. Y. Tool Co.....dis 20 %
English Iron.....dis 20 %
Bailey's.....dis 20&10%

Plated Ware.—Rogers & Bro.....dis 40&10

Pliers.—Vom Cleff & Co.'s.....net list
Button's Wire Pliers.....dis 33⅓ %

Plumb & Levels.—Stanley R. & L. Co ...dis 65&10 %

Pocket Knives.—American Shear Co.'s. ....dis 40 %

Potato Diggers.—W. C. & Co., reduced list..dis 40 %

Pulleys.—Acme or Excelsior, 1¾ in.....₱ doz 22c
Acme or Excelsior, 2 in.....₱ doz 27c

Pulley Blocks......dis 33⅓ %

Pumps.—Union Manufacturing Co.
Iron Cistern.....dis 40 %
Iron Pitcher Spout.....dis 40 %
Copper.....dis 40 %

Rivets.—Black (new list).....dis 40 %
Carriage in 10 ℔ papers (new list).....dis 40 %
Copper.....dis 33⅓ %

Razors.—Torrey's.....dis 40 %

Razor Straps.—Torrey's.....Full line

Rules.—Stanley, Boxwood.....dis 70 &10 %
Stanley, Ivory.....dis 66&10 %

Sad Irons.—Common.....₱ lb 5½c
Laundry.....₱ lb 6½c
Tailors' Geese.....₱ lb 6 c
Enterprise, "Potts".....dis 33⅓ %

Sash Locks.—King & Hutchinson's, new list.dis 40 %

Sandpaper.—Baeder & Adamson.....dis 40 %
M. B. & D.....dis 50 %

Sash Weights.—Patent Eye.....₱ lb 1½c

Saws.—Hand Saws, Disston's.....dis 20 %
Wheeler & Clemson.....dis 20 %
Cross-Cut Saws.
W. M. & Co., Common Tooth, No. 1.....₱ foot 30c
W. M. & Co., Champion Tooth.....₱ foot 30c
Disston's, Common Tooth.....₱ foot 66c dis 25 %
Disston's Great American Tooth...₱ foot 66c dis 25 %
Boynton's Lightning Tooth.....₱ foot 40c
M. B. & D., Hand Saws.....dis 33⅓ %
W. M. & Co.'s Circular Saws.....dis 25 %
Richardson Bros.....dis 25 %

Saw Blades.—Disston.....dis 20 %
W. M. & C.....dis 20 %
Welch & Griffith, Extra.....₱ doz $4.00
Welch & Griffith, No. 2.....₱ doz 2.50

Scales.—Fairbanks.....dis 20 %

Screws.
American Flat-Head Iron.....new list, dis 55 & 10 %
American Flat-Head Brass.....new list, dis 55 & 10 %
American Round-Head Brass....new list, dis 55 & 10 %
American Round-Head Iron....new list, dis 50 & 10 %
Grilley Round Head Nickel-Plated Common..dis 40 %

Scythes.—Clippers, in boxes.....₱ doz $9.00

Shaves.—Kimball's.....₱ inch 75c
Watrous.....dis 10 %

Shears.—American Shear Co., new list.....dis 40 %

Shot.—Tatham's.....₱ ℔ 7c

Shovels.—O. Ames, new list.....dis 10 %
O. Ames, other brands, new list.....dis 10 %
M. B. & D.....dis 10 %

Sinks.—Magee Patent.....dis 40 %

Snow Shovels......$2.00

Skates.—Union.....dis 20 %
Acme.....dis 20 %
Imperial Club list No. 5, $3.75 ₱ pair; list No. 7, $6.00 ₱ pair.....dis 20 %

Stocks and Dies.—King's.....dis 10&5 %

Tacks.
Swedes Tinned.....dis 30 & 5 %
Swedes Iron.....dis 30 & 5 %
Gimp and Lace.....dis 20 & 5 %
Copper Tacks.....dis 40 & 5 %
All balances on list.....dis 20&10 %

Traps.—Oneida, Genuine.....dis 10&5 %
Oneida, Imitation, H. & N.....dis 40 %
Blake's.....dis 40&10 %

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Prentiss'.....dis 20 %

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In 25 feet boxes: No. 1, ⅛ in. wide, ₱ yard, 10c.; No. 2, ⅝ in., 14c.; No. 3, ¾ in., 20c.; No. 4, 1 in. Black Walnut Spring Weather Strips.....₱ doz $3.00

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Babcock's No. 4.....₱ gross 4.50

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Wrenches.—A. G. Coe's.....dis 40 %
Girard Mfg. Co.....dis 50 & 10 %
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Novelty " 3 " " " .....₱ doz
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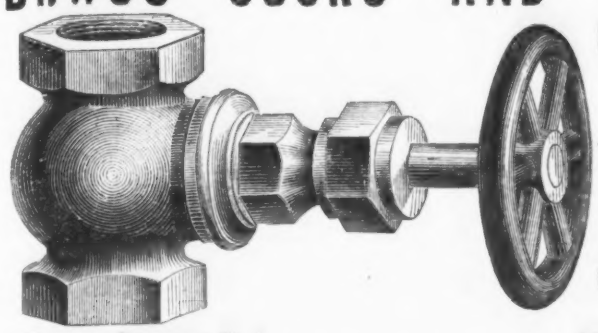

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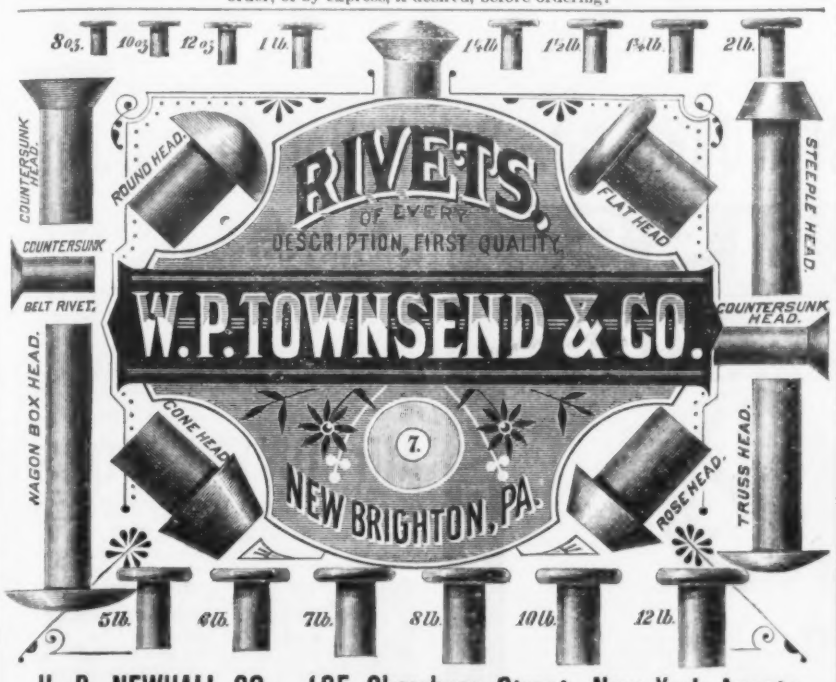

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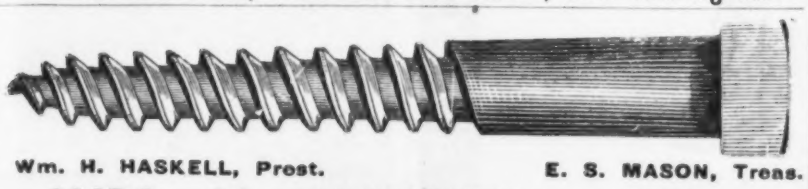

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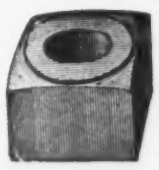

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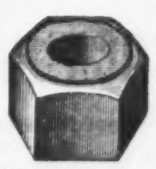

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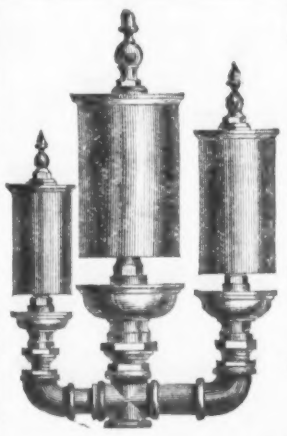

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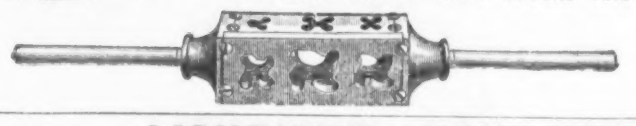

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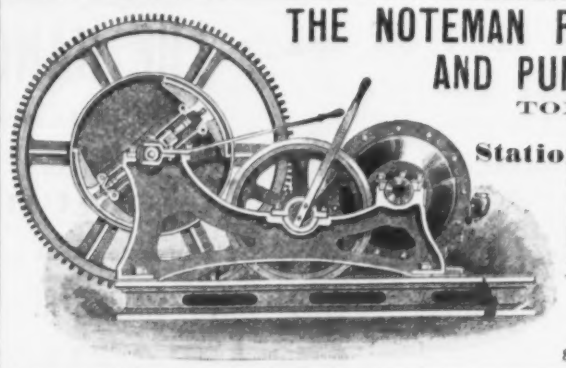

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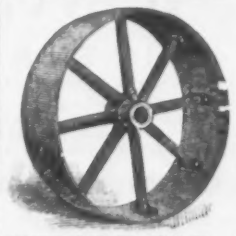

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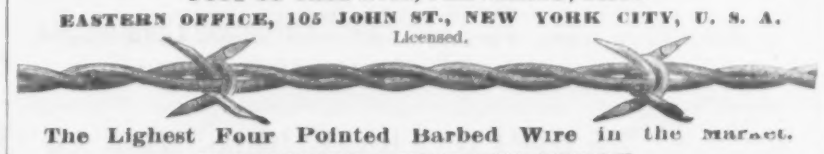

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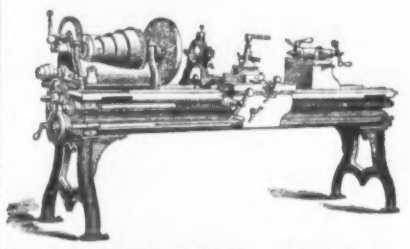

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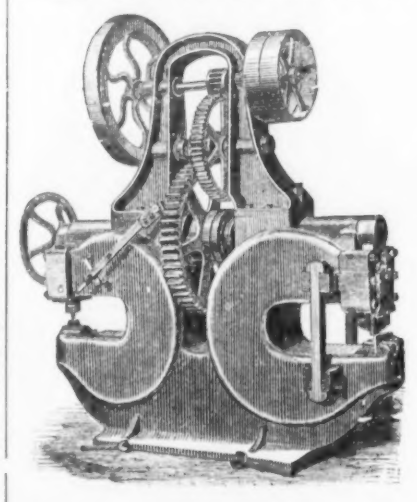

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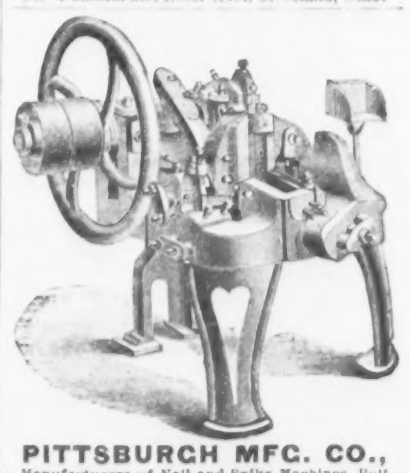

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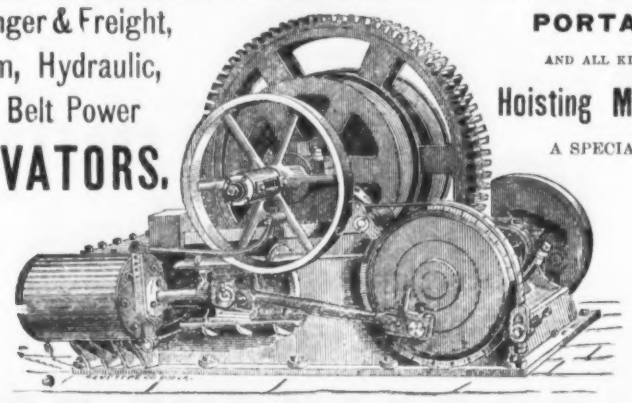

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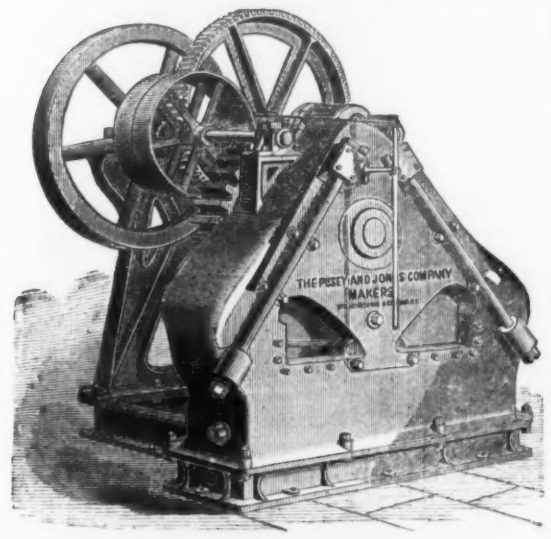

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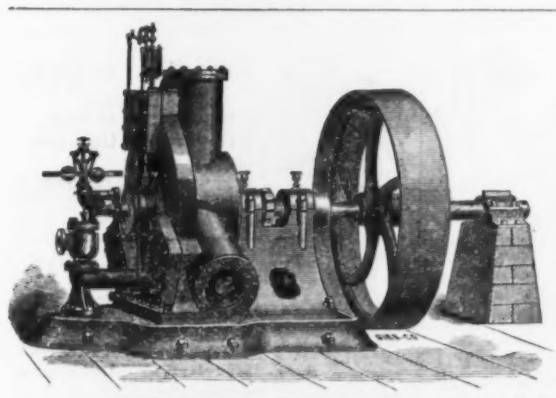

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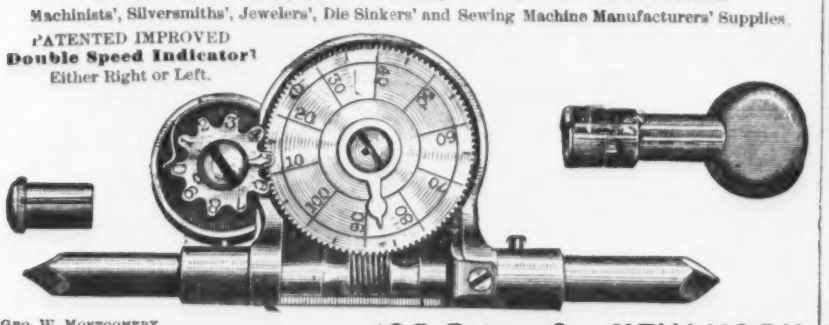

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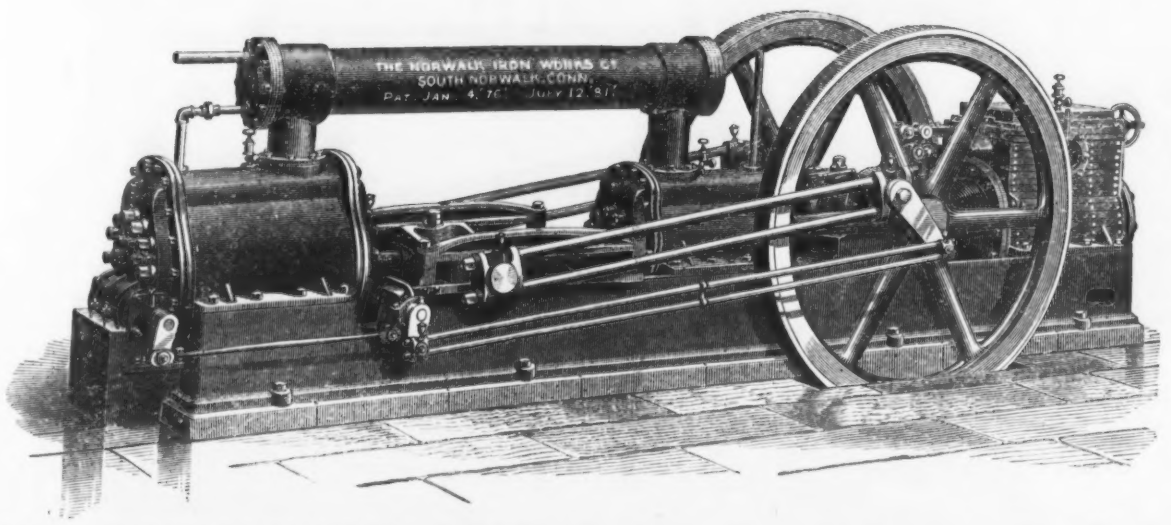

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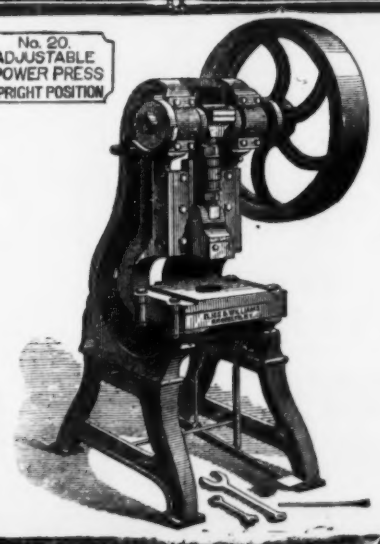

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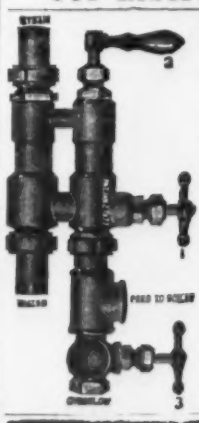

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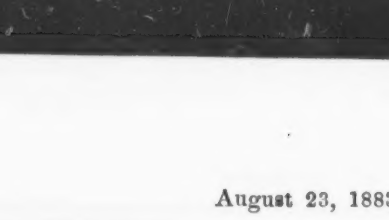

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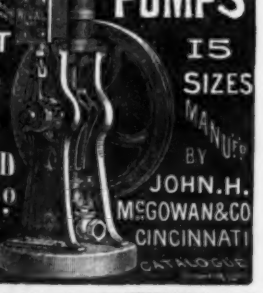

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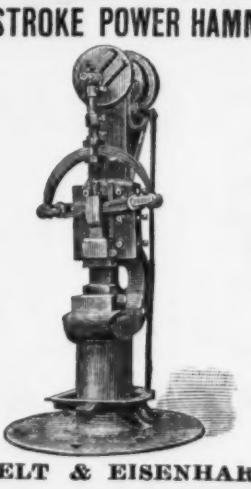

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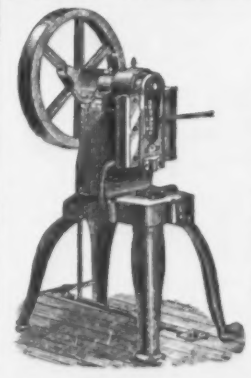

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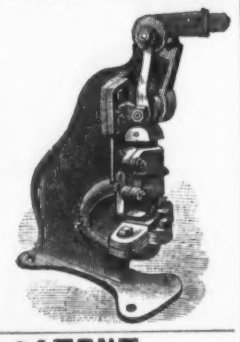

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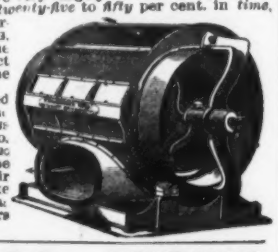

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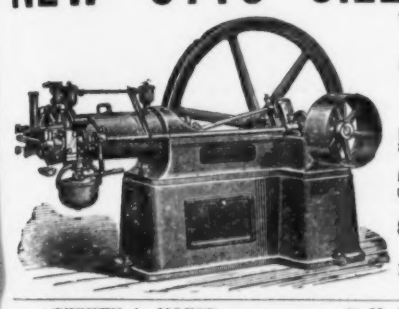

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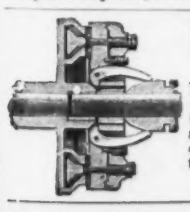

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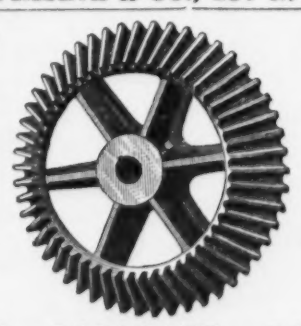

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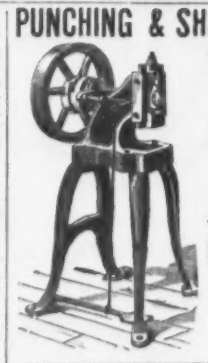

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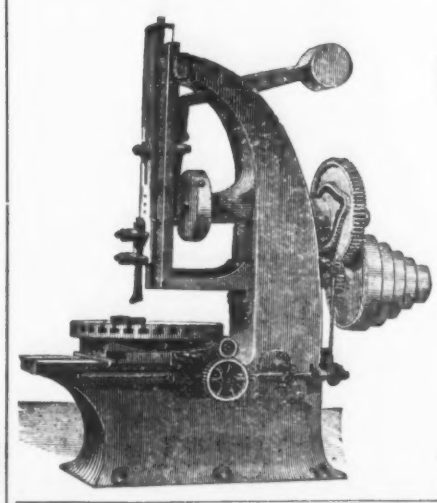

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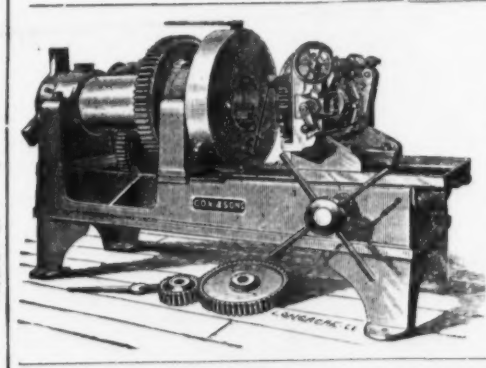

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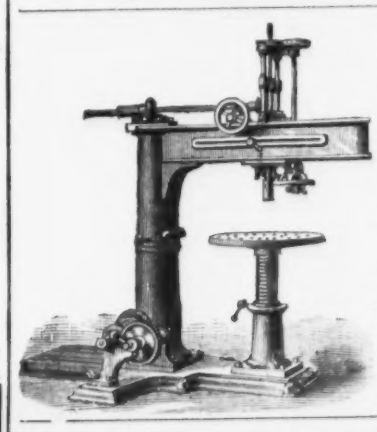

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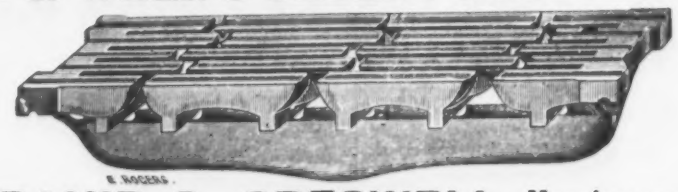

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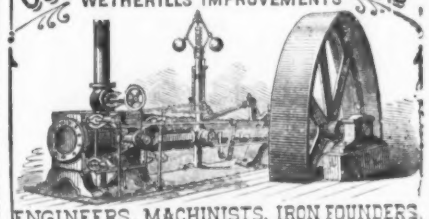

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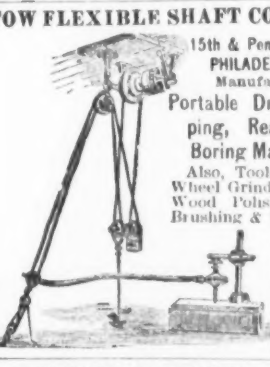

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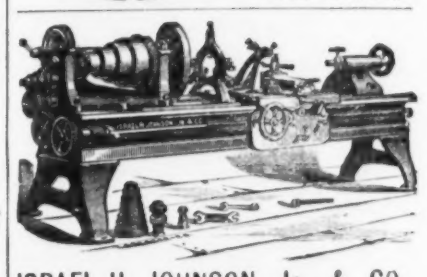

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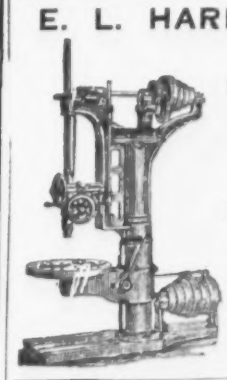

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